Railway Age

AND RAILWAY REVIEW

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Railway Age

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Automatic Signals An Aid In Either-Direction Operation

THAT automatic signals are decidedly advantageous in double-track operation, especially when trains are operated in either direction on each track, has been proved on the 60 miles of Cleveland, Cincinnati, Chicago & St. Louis line between Cincinnati, Ohio, and Greensburg, Ind. This road has for years followed the practice, on double track, of utilizing idle stretches of the opposite main track to run faster trains around slower ones, this method of operation not only increasing the track capacity, but reducing the delay to trains waiting on passing tracks. Heretofore trains have been governed by manual block, stations with interlocked crossovers being spaced about six miles apart, but, as a part of a system program, automatic block signals were installed on this section last year. These signals permitted a spacing of about a mile between trains as compared with six miles as required formerly under strict manual block operation involving passenger trains. Five of the nine manual block stations were abandoned with a saving in operator's wages of $931 a month. The established method of either-direction operation is continued, but with the automatic signals the track capacity has been increased to such an extent that the number of run-around movements has decreased approximately 33 per cent, and the average running time of freight trains has been reduced a little over 10 minutes on this 60 miles. These signals have increased the safety of train operation, and, in addition, have effected savings in operating costs, and reduced running time.

The Evolution of the Enginehouse

BUILT of ashlar stone masonry with arched doors and windows, and slate roofs, many of the roundhouses of earlier years were outstanding examples of excellence in building construction. Further than this, the few still in use can but serve as mile-stones of progress in enginehouse design, and that only through contrast with the equivalent facilities provided today, for in past years an enginehouse was nothing more than what the second syllable of the term implies, namely, a "house." The general gloom, the obvious result of inadequate provision for either natural or artificial lighting, was intensified by a smoke and steam-laden atmosphere which could be cleared only by opening the doors and windows when outside temperatures permitted. Equipment to facilitate the conduct of roundhouse work embraced little more than hand tools and a bench. To trace the evolution of the enginehouse through its various stages would make a long story with separate chapters devoted to lighting, heating, ventilation, boiler washing and the introduction of other forms of service equipment unheard of before the beginning of the present century. The change brought about by adequate electric lighting, with conveniently located sockets for extension cords, can be appreciated fully only by those who are familiar with the days of the smoky oil torch. But even more noteworthy are the improvements wrought by the introduction of elaborate systems for the distribution of cold water, hot water for washing and filling boilers, steam, gas, compressed air and the advent of blow-off lines and electric welding circuits, together with power cranes, jib and trolley hoists, modern wheel drop pits, etc. Still more outstanding is the improvement brought about by the development of efficient smoke stacks, smoke exhaust systems, or systems which make the emission of smoke entirely unnecessary. The efficiency of workmen is influenced not only by the introduction of labor-saving appliances, but also by the attractiveness of the surroundings in which they are employed. The evolution of the enginehouse effected through the co-operative efforts of the mechanical and engineering departments has been a potent factor in the improvement of railway transportation.

An Inexpensive Method of Grade Crossing Elimination

PRESIDENT J. M. Davis, of the Delaware, Lackawanna & Western, in a recent public statement calls attention to an anomolous injustice in public policy in dealing with non-remunerative railroad improvements. These improvements, such as grade crossing elimination and providing beautiful stations and station grounds, are extremely costly to the railroads. They bring in little if any additional revenue. Yet they are taxed just as if they were earning enormous returns on the investment. In other words, the economic incentive that public policy provides for such improvements by railroads is practically nil, while public clamor for expenditures of this character is incessant. Mr. Davis says that his property has spent more than $29,000,000 on the elimination of grade crossings alone and still has done away with but 36 per cent of the total of its highway crossings. As a means of eliminating more crossings without the same proportionately heavy expenditures which, in view of the lack of recompense and the increase in taxes, cannot go on indefinitely, Mr. Davis suggests a more extensive use of the parallel connecting highway. In the days of the horse and buggy, Mr. Davis points out, frequent crossings were desirable to save the time of highway users. Nowadays, however, with the automobile a matter of a half-mile or a mile is an inconsequential matter when figured in minutes; and many crossings, with connections built to grade separation points, could be eliminated without serious effect on highway traffic. Since

local authorities generally share with the railroads the expense of grade crossing elimination, the saving to the taxpayer would be considerable. President Davis, in inviting attention to a practicable method of lessening the grade crossing evil which promises definite accomplishment without necessitating heavy expenditures either by the railroad or the taxpayers, has done the communities along the Lackawanna a distinct service, and the plan could doubtless be applied successfully elsewhere.

The Result of a Consistent Program

RECENT issues of the *Railway Age* have contained numerous references to reductions in the schedules of passenger trains between important points. These changes are so numerous and widespread as to indicate a very definite trend in passenger service. Reductions in schedules are equally pronounced in freight traffic, and shippers are receiving a service which has never before been equalled for either speed or regularity. The development is not accidental; neither is it independent of other railway developments. Rather, it has been made possible by, and is the direct result of the most aggressive and continuous campaign ever waged by the railways for the improvement of their fixed properties. During the last six years the roads have expended nearly five billion dollars for the expansion and improvement of their facilities, and particularly of their roadway facilities. During the same period the expenditures for the maintenance of these facilities have been equally liberal. As a result, there has never been a time when the tracks and structures have been as well prepared to handle a heavy traffic expeditiously. It has been said that the Baltimore & Ohio worked for ten years to improve its roadway between Washington and Chicago with the Capitol Limited definitely in mind before that train was announced, with the result that since it was installed its schedule has been maintained with a remarkable degree of regularity. Similar developments have been taking place quite generally over the country since the return of the roads to private control, bringing about an improvement which is making possible the shortening of schedules and the improvement of railway service otherwise. It has long been an axiom that the railway track is the foundation on which railway service is based. The improvement in schedules which is now taking place substantiates that statement, and goes far to justify the expenditures which the railways have made to this end in recent years.

Trend of Freight Business

THE total weekly loadings of freight cars promise soon to equal or even exceed those of 1926 and 1927. In January they averaged 84,200 weekly less than in 1927, and about 60,000 less weekly than in 1926. In February they averaged 58,600 less than in 1927, and 22,000 less than in 1926. In March they averaged 53,200 less than in 1927, and 18,500 less than in 1926. In April they averaged 41,000 less than in 1927, and 21,000 less than in 1926. In the first two weeks of May they averaged only 36,000 less than in 1927, and 22,000 less than in 1926. These figures clearly show that, month by month, the 1928 volume of freight business has been approaching more closely the total shipments made a year and two years previously. This indicates that the total volume of production and distribution in the country is becoming relatively large, for total freight business in 1926 was the largest in history, and that of 1927 was larger than that of any previous year, excepting 1926. Shipments of miscellaneous freight, which consists largely of manufactured products, are often assumed to forecast better than any other class of shipments the future trend of freight business in general. They were smaller until the end of April than last year, but in the first half of May were slightly larger than ever before at that time of year. Loadings of coal continue to be relatively small, but there have been other influences that have helped to restrict total car loadings. For example, the movement of ore is seasonal because most of it is carried partly via the Great Lakes, and it began to move in large volume unusually late this year. In the first week of May, 1927, loadings of ore amounted to 56,476 cars, while in the first week of May this year they amounted to only about 16,000 cars. The movement of ore is now well under way, however, and will soon exert a substantial influence on figures of total loadings. It is by no means inconceivable, and, in fact, it seems not improbable, in view of the recent trend of traffic, that in the late summer or early fall, the railways will find themselves called upon to handle a larger volume of freight business than ever before in history.

Pension Plan Tendencies in Other Industries

ANDREW Carnegie, in establishing the Carnegie Foundation for the Advancement of Teaching, provided an endowment for the payment of pensions to college teachers, with the thought of making a free gift to the "old and honored teacher no longer able to continue his professional work." Fortunately the trustees were given very broad powers and after the most thorough and painstaking research, concluded among other things, so far as pensions for college teachers are concerned, that, "only that pension system will be fruitful and feasible which is provided by annual contributions extending over a term of years, furnished by the joint participation of the government of the college and the individual, and that the old-age annuity should be on a contractual basis."

The Foundation, in making its studies of old-age pensions for teachers, went far beyond the confines of this particular profession and, indeed, has made exhaustive studies of all pension systems throughout the world. Its annual reports are regarded as the most complete and advanced literature on the pension problem. A few pages of each report are given over to a consideration of the question of retirement in industry, a discussion of new industrial pension plans and comment on pension publications and discussions. The reports of new industrial pensions briefly sketch the progress which is being made in that field from year to year. Inasmuch as such pensions should have much in common with railroad pensions, it may not be unprofitable to see just what tendencies have been most evident in recent years.

In the 1924 report of the Foundation, for instance, we find special emphasis being placed upon the fact that most pension plans in the industries are defective, in that they do not contain a contractual feature. The report contains this significant statement: "A pension which is not founded upon a legally enforcible contract represents a hope, and not a dependable support in old age. Employers hesitate to commit themselves and their

companies to future payments which may attain proportions beyond their ability to meet. Yet a legally enforcible contract is just what an employee must have if his old age is to become secure."

The 1925 report comments upon the fact that the developments during the year "reveal two welcome tendencies in the direction of soundness: The first, toward funding pension obligations in advance; the second, toward contractual security," and considerable space is given to the New York Stock Exchange employees' retirement plan, which is typical of that adopted during the year by three important concerns. In this same report, in announcing a pension plan which had been started by one of the railways, the sentence opens with these words: "An old-fashioned, non-funded, non-contributory pension system was inaugurated, etc."

Special emphasis in the 1926 report was placed upon the fact that 15 organizations had thus far adopted group annuity contracts with one of the life insurance companies.

In the review of new industrial pension plans in the 1927 report, the statement is made that a very large proportion of the pension plans inaugurated or even revised during the year failed to reflect the best principles of retirement.

There has thus been a tendency in industry during recent years toward plans which have either been adequately funded or are of a contractual nature. To what extent should this policy be followed by the railroads? Is their future so assured that they can safely pass on to coming generations pension liabilities which have accrued up to the present time, or which are accruing, or should adequate measures now be taken to more fully protect the interests of present employees and pensioners? Does the fact that the railroads are public utilities under rather rigid government regulation, give any greater assurance of the future stability of pension plans than would be the case in an industrial organization? These questions are suggested by a study of recent tendencies in new pension plans, or the revision of old ones, in the industrial field.

The Air Transport Situation

CHANGES in the air transport situation in the United States have come so rapidly during recent months that it may be well, at this time when the railways are becoming more closely involved in it, to take stock of present conditions in that field. Not only have the physical characteristics of air transportation been altered markedly, but the general conception of what place air transportation may ultimately have has come in for some revision. What, then, is the present situation?

The transportation of mail is still the principal reason for the existence of a majority of the air lines. There are now 23 companies carrying mail by airplane under contracts with the government, and this number will be increased shortly, several additional contracts having been awarded recently. A few months ago there was one "main" air mail line, the transcontinental route from New York to San Francisco. Now there is another "main" line extending southward from New York to Atlanta, Ga., and New Orleans, La. From these lines branches radiate to many points. The total air mail route mileage is now over 10,000 and the mail planes fly over 22,000 miles daily. Day flying of the mail, which generally does not permit the full use of the advantages of air mail service, is being replaced as rapidly as possible by night flying, as the Department of Commerce goes ahead with its program for the lighting of the airways. A number of the principal air mail lines also carry express under contract with the American Railway Express Company, and some of these carry passengers at rates averaging a little more than 10 cents a mile. In addition to the air mail lines, there is a rapidly growing number of lines specializing in the transportation of passengers, or passengers and express. The Department of Commerce, as of May 15, reports 10 such passenger and express lines operating over two thousand miles of routes.

Although these air transport lines have been successful in developing a steadily increasing mail, express and passenger business, it is nevertheless true that most of them are still finding it difficult to bring their revenues up to the point where they will equal or exceed their expenses. In 1927 the various air lines carried 1,654,165 lb. of mail, 2,263,480 lb. of express (practically all of which was Ford Motor Company express carried between Detroit and Chicago), and 8,679 passengers. Most of the lines have reported the statistics of their operations to the Department of Commerce. The Department discloses in a recent statement that 17 of the 21 companies operating in 1927, with an investment of $4,278,650, had a total revenue from mail, express and passenger transportation and from auxiliary air service operations of $2,201,150 and expenses of $2,151,340. On the face of these figures it would appear that the air transport operators as a whole are doing a little better than paying their operating expenses. However, it must not be forgotten that these figures have been affected to a great extent by the remarkable earning power which a very few of the lines have developed. Excepting these unusually successful lines, it is probably true that the companies included in these figures will show expenses exceeding their revenues to a greater or less extent. This is not to say that air transport operations are inherently unprofitable. On the contrary, all of the air lines are showing steady progress in developing business and to some extent in reducing expenses, and those which are now losing money are showing as time goes on a more and more narrow margin of loss. The exceptional success of one or two of the air transport companies is evidence that money is to be made in the business. Outstanding among the new developments is the marked trend toward more extensive passenger service. It is probable that since most of the country is now being served more or less closely by air mail routes, these will not increase as rapidly in the future as they have in the past, but rather that efforts in connection with the air mail will be made to develop as great traffic as possible on the existing lines. More night flying of the mail and the reduction in air mail rates recently authorized by Congress should have a favorable effect in this direction. In the case of passenger transportation by air, however, anything but a period of comparatively quiet development is indicated. Literally scores of new air routes for passengers are projected and many of these will doubtless begin actual operations in the near future. Some of these lines will probably seek affiliation of some sort with the railways. Announcements of projected co-ordination of railway and air service have already been made, notably the one with reference to the organization of the Transcontinental Air Transport by the Pennsylvania, the National Air Transport and several airplane manufacturers. It is known that several other air lines are negotiating with railways with a view to establishing similar co-ordinated service.

Prediction as to the success of these air lines devoted

to passenger business would be unsafe. In the past air passenger service has not been profitable, but it is quite possible that some of the lines now projected will be able to do what their predecessors have been unable to accomplish. Certainly conditions affecting the transportation of passengers by air are now much more favorable than ever before. The public is gradually becoming accustomed to airplanes and has a growing confidence in their safety. As passenger traffic develops rates will be reduced, and another barrier to the general use of the airplane for travel will be proportionately lowered. Finally, the most important factor is the railroad affiliation with the passenger air lines, which should result not only in greater public confidence in air transportation, but which will also put the financial and traffic development resources of the railways behind air passenger service development.

Air transportation in the United States has taken great strides during the past year or so. It is the consensus of opinion of those most closely in touch with it, however, that the progress which has been made in the past will be insignificant in comparison with the progress expected to be made in the not far distant future. These anticipated air transport developments will have their effect upon the railways, just as developments in other lines of transportation have affected them.

Politics in Regulation

RECENT developments may well cause grave concern to those who desire to see the railways regulated in accordance with sound economic principles, rather than in accordance with the most unsound political principles. The resolution of Senator Wheeler of Montana, virtually directing the Interstate Commerce Commission to reduce the rates of the northwestern lines on farm products, was passed by the Senate without hearings, discussion or a single dissenting vote. The qualification in the resolution to the effect that lower rates should be made if they would be "compensatory" plainly was intended to be disregarded by the commission, if it could be prevailed upon to do so. The commission already was engaged, under the Hoch-Smith resolution, in a comprehensive investigation of freight rates on farm products, and the obvious purpose of the Wheeler resolution was to put pressure upon it in behalf of a reduction in rates, regardless of its justice and ultimate economic consequences.

The author of the resolution ran for vice-president upon the so-called "Progressive" ticket four years ago upon a platform advocating government ownership of railways. He is well known to be one of the most radical members of the Senate. There are supposed to be in the Senate many conservative men who are opposed to government ownership or confiscatory regulation, but not one of them raised his voice against the resolution, although it is notorious that, throughout the eight years since the railways were returned to private operation, the northwestern roads have made the poorest net earning of any group in the country, have earned far less than a fair return, and could not stand any considerable reduction of their rates. The original preamble of the resolution mentioned the president's veto of proposed farm-relief legislation as a reason why the farmers must have lower freight rates. The preamble was struck out, but this did not destroy its significance. It meant that, as the government had failed to give the agricultural industry a subsidy at the expense of the general taxpayers, it should be given a subsidy at the expense of the railways through reduced rates; and many men who had voted against the McNary-Haugen bill assented to this resolution.

The passage of the resolution affords one of numerous illustrations of a tendency to substitute direct regulation of railways in accordance with political pressure for regulation by the Interstate Commerce Commission in accordance with its own judgment and supposedly sound economic principles. The Senate, by an almost unanimous vote, recently took the unprecedented step of memorializing the Supreme court in favor of letting Donald R. Richberg appear in valuation litigation before it in behalf of a radical organization which favors a method of valuation even more unfavorable to the railways than that of the Interstate Commerce Commission. The Senate refused to confirm the reappointment of Commissioner Esch because of his vote in a particular case. The Senate Committee on Interstate Commerce, without hearings, has reported favorably a bill to abolish the sleeping and parlor car surcharge. Congressman Hoch has written the commission a letter criticizing it for not accepting the dictum of Congress in the Hoch-Smith resolution that there is an agricultural depression and arbitrarily reducing the rates on farm products.

These and many other occurrences evidence a disposition on the part of many members of Congress to speak, to introduce railway legislation and to vote upon it with the most reckless disregard of sound principles of regulation, of the lawful rights and economic needs of the railways and of the probable effects upon railway development and service.

The railways may comfort themselves with the reflection that most of the legislation inimical to them that has been proposed has not been passed. They may comfort themselves with the apparent fact that the public understands the railway problem better, and that public sentiment is more favorable, than in past years. But we believe such cheerful and optimistic reflections may be indulged in to an excessive degree.

Constant agitation for certain forms of regulation has been successful in the past, especially before the war, because the agitation finally created a sentiment in favor of the proposed regulation regardless of its merits. The public is easily led to believe almost any policy is desirable if there is constant propaganda for it and less strong and continuous propaganda against it.

Furthermore, men who profess to accept certain principles in the abstract very commonly are prone to extenuate or favor disregard of them in concrete cases if they believe this will be beneficial to themselves. No doubt a large majority of the farmers think they believe in regulation that will assure the railways a fair return and the continuance of good transportation service, but unless their inconsistency is clearly shown they will continue to support the movement for reductions of freight rates on farm products regardless of its probable effects on railway earnings. No doubt a large majority of railway employees want to see the railways prosper, but most of them will support a movement for higher wages regardless of its probable effect on earnings and rates. Many business men are as inconsistent as the farmers and railway employees. They profess almost unanimously to be opposed to more government in business, and especially to every form of government ownership and operation. Nevertheless, many of them have supported legislation for increasing the government's investment in the Inland Waterways

Corporation, which plainly provides for an extension and indefinite continuance of government ownership and operation of barge lines on inland waterways.

The railways are plainly in danger of finding themselves confronted with a public sentiment which applauds the good service they render, which professes to favor regulation by the commission in accordance with sound economic principles, which concedes that, the railways need and should have a fair return, but which will condone and even support so much action dictated by political considerations in the supposed interest of particular classes and territories that the nation's ostensible policy of regulation will be completely broken down, the earning of a fair return by the railways will be made impossible, railway development will be arrested and railway service will deteriorate to what it was before the passage of the Transportation Act.

The need for conferences and study by railway executives regarding the entire situation is apparent. They should formulate a definite policy for the protection of the railroad industry which will bear upon all the issues now in controversy, and which can be so presented that there will be some chance of getting real public support for it. They should arrange for a national campaign of education in support of this policy. The number of proposals inimical to the railways and the number of voices being raised in support of these proposals are much too numerous in proportion to the number of proposals being advanced in behalf of a sound policy of regulation and the number of voices being raised in behalf of such a policy. A public sentiment which enthuses over the service now being rendered by the railways and which expresses a pious hope that they will be able to earn a fair return, but which condones and even supports numerous specific measures which, combined, would be sufficient to destroy railway net earnings and ruin railway service, is as useless and vicious as a public sentiment which frankly expresses itself in favor of a destructive general policy of regulation.

Future of Motor Truck in Terminal Service

AN Interstate Commerce Commission hearing on terminal freight handling in New York, now in progress is bringing to official attention one of the most complex terminal problems which the railroads have. It is also providing an opportunity for all the many interests involved to offer their ideas as to improved methods and practices and is bringing to light many aspects of the problem of store-door collection and delivery of freight which have a country-wide significance.

In 1921 the Erie initiated its "constructive station" service for lower Manhattan Island, New York. Prior to that time freight was brought to the rail head at Jersey City and the cars floated to a Manhattan pier where consignees took delivery, hauling the freight away in their own trucks or assigning the task to a contract truckman.

Under the constructive station plan, the Erie appointed a trucking concern as its agent to get the freight at the rail head at Jersey City and truck it by ferry to the ferry entrance in Manhattan. If the consignee desires, he can at this point (i.e., the "constructive station") designate the same truckman as his agent to accept the freight and convey it to his place of business. Similar service is offered to shippers.

The truckman, having the freight already loaded on his truck, can afford to offer the consignee an attractive rate and can often also save some time in delivery. The railroad, by having the shipment accepted on a truck at the constructive station, is saved the expense of providing station facilities and handling for such shipments on the Manhattan side. In addition to the constructive station service, the Erie at the same time provided "inland stations" on Manhattan. These stations are simply warehouses owned or controlled by its trucking contractor where freight is accepted from shippers or delivered to consignees in the same manner as that obtaining at a pier freight station, the only difference being that freight is handled between the pier station and rail head by car float or lighter by the railroad itself, whereas with the inland station the connecting link is the contractor's motor trucks and the contractor acts as the railroad's agent in receiving or delivering freight at the inland station.

Most of the roads entering the Port of New York followed the Erie in offering constructive station service to shippers and consignees, and two others also provided the inland stations. In the current proceeding all but one of them are proposing to abandon the constructive station service, the three using inland stations retaining them.

Then there is also the matter of trucking in lieu of lighterage. In certain limits in the Port of New York the railroads make collections and deliveries of carload freight by lighter, in the same manner as carloads are delivered and collected on industrial tracks in all-rail terminals. In some cases railroads have substituted trucks for lighters in handling some of this business. Since trucks can go to points where lighters cannot, however, some interests in the proceeding seem to fear the extension of lighterage service to patrons not entitled to it.

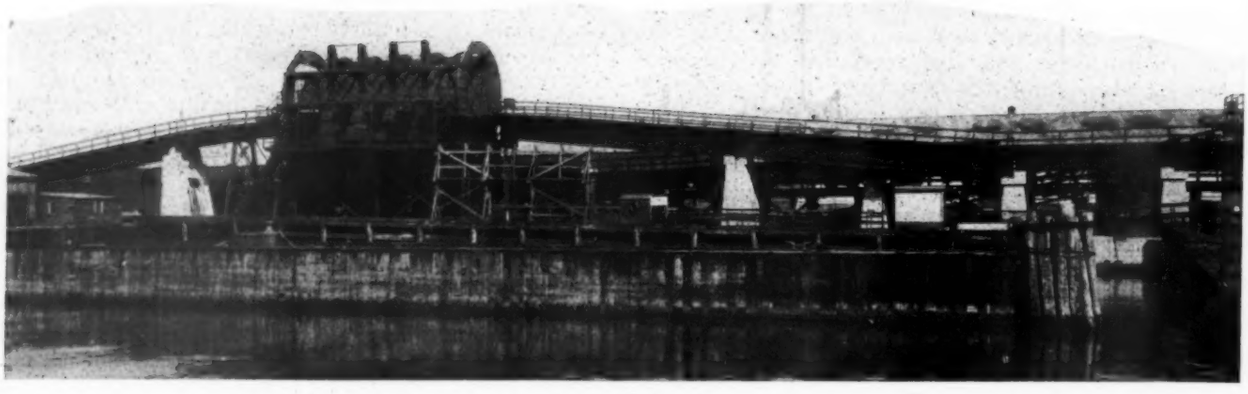
In the case of trucking either in lieu of lighterage or to inland or construction stations it has been the practice of railroads to contract with one or more trucking concerns as their exclusive agents. Independent truckmen not favored with these contracts seem to fear the competition of the contractors in securing business from shippers and consignees.

It is also suggested that railroad contract truckmen are in a position to discriminate as between shippers, and that the railroads cannot adequately control their performance. One road which favors the constructive station plan as a measure which may eventually enable it to release piers for which it pays a high rental, says that if contract truckmen cannot give honest and efficient service, then it is prepared to place in operation its own fleet of trucks. Other roads which do not forsee an early opportunity to release piers take the position as long as existing piers can handle the business and have to be kept in operation anyhow, that trucking service to a constructive station is an added and unwarranted expense to them.

Certain influential shipping interests, however, seem to be highly favorable toward the constructive station service and desire its continuation under proper safeguards as to equality of treatment of all patrons. Altogether the case has potentialities for a report and finding which might have an important bearing on future terminal practices not only in New York but at other points as well. It is encouraging, therefore, to see that the railroads involved are not stinting themselves in adequately presenting their side of the case.

Western Maryland Enlarges T

Facilities at Baltimore, M



General View of the Western Maryland's Coal Loading Facilities at Port Covington, Md.

IN order to expedite the handling of its large export coal business at tidewater, involving the transferring of coal from cars to ships, the Western Maryland has recently enlarged its coal-handling facilities at Port Covington, Baltimore, Md., by the installation of a revolving type car dumper and a system of conveying belts, which have more than doubled the capacity of the old layout. The new installation is of interest by reason of its compactness, its large capacity, and its dependability; however the point of chief interest in this new equipment, which can handle from 35 to 40 cars per hour, lies in the fact that it represents the first use of this special type revolving car dumper for the loading of ships at tidewater.

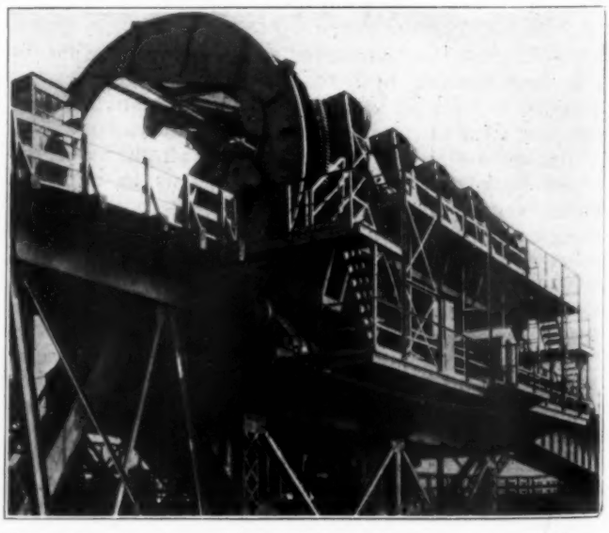
In addition to the car dumper, this installation includes steel and concrete trestles at the approach and departure ends of the dumper; a mule haulage arrangement for introducing cars into the dumper; a receiving hopper for collecting coal dumped from the dumper; an apron feeder for removing coal from the hopper; and a 60-in. conveyor belt, 500 ft. long, which delivers the coal through a chute to a loading boom, equipped with a 54-in. apron feeder. From the loading boom the coal passes through a telescoping chute to a mechanical trimmer which deposits the coal into boats. This equipment supplements the coal-loading facilities installed by the Western Maryland at Port Covington several years ago, which include primarily a car dumper of the direct-lifting type for serving one side of the pier, and an auxiliary conveyor-loading plant for placing the coal in boats on the opposite side of the pier.

New Dumper is Simple of Operation

The new car dumper consists essentially of a car receiving and holding cradle, which is supported at each end by two pairs of equalized rollers upon which it revolves. These rollers are mounted in structural steel carriages which are bolted securely to the foundation upon which the dumper is installed. The end frames of the cradle are in the form of circular girders partially surrounded by gear segments, and likewise, the sides of the cradle are of plate girder construction, which, with the ends, form a box-like structure, open at the top and in part at the ends, in which the car is held while being dumped. Rotation of the cradle is accomplished by two pinions meshing with the gear segments and driven by a single motor supported on the main foundation at the rear of the cradle.

The track rails passing through the cradle are mounted on a movable platen which is capable of lateral movement, and the cars received in the cradle are held securely to the rails while being dumped by four overhead clamps which automatically engage the car. The function of the movable platen is to permit the lateral movement of the track rails and the car in the cradle to a firm bearing against the dumping side of the cradle. This platen consists of a structural steel platform supported on rollers, with variable limits of travel, to take care of varying widths of cars.

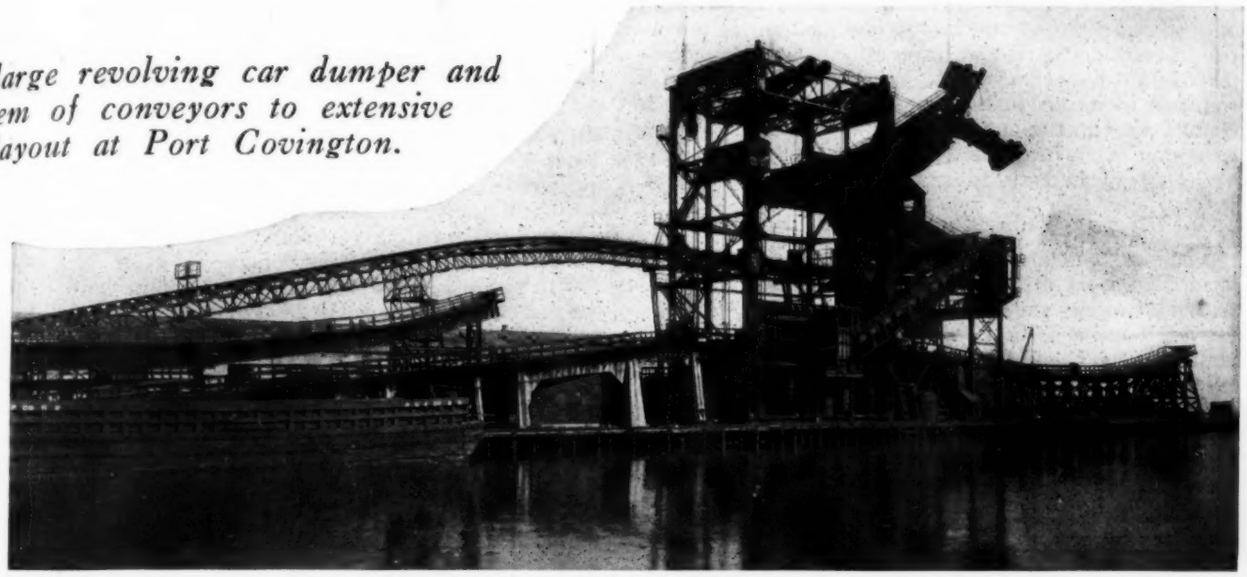
In the initial position of the cradle, adjustable centering rollers hold the platen in accurate alinement with the approach and departure tracks, these rollers engaging



Rear View of the New Dumper, Showing the Car Riders' Platform at the Rear and the Receiving Hopper Beneath

s Tidewater Coal Loading

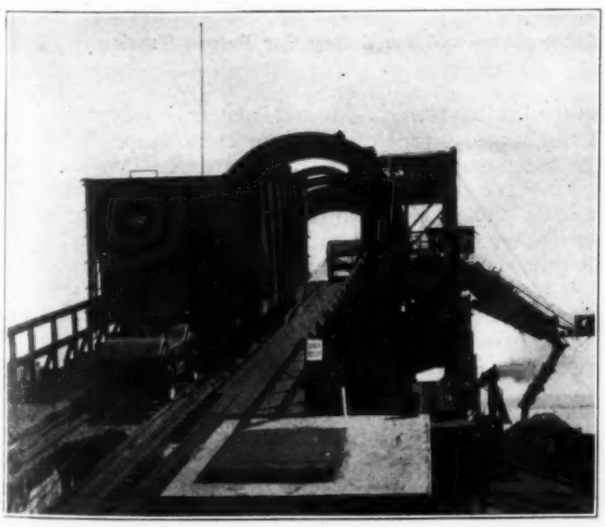
s large revolving car dumper and ystem of conveyors to extensive layout at Port Covington.



striking plates in the foundation at the ends of the dumper as the cradle approaches its true upright position. The final alinement of the platen is accomplished against the pressure of heavy compression springs in the cradle, which act as cushioning stops on the return of the platen, and furthermore, as an accelerating force to move the platen and loaded car laterally during the first part of the cradle rotation.

Car Clamps Operate Automatically

The clamps for holding the dumped car are of the pivoted counterweight type, each of the four clamps, which are uniformly spaced across the top of the cradle, being operated by an independent counterweight attached to an arm pivoted to the cradle. Each clamp consists of a steel beam, hinged to a sliding hook casting which moves vertically in guides attached to the cradle frame opposite the dumping side. The clamp beam in each case is long enough to span the top of the widest car,



The Electric Mule Pushing a Car Into the Cradle of the Dumper

and in its holding position rests on the top edge of each side of the car.

In the actual operation of the car dumper, as the cradle with a loaded car starts to revolve, the track platen moves laterally toward the dumping side of the cradle until the side of the car comes in contact with blocking provided for that purpose, and then the car clamps descend automatically until they rest on the top of the car.

On the continued rotation of the cradle the clamp counterweights come into play and hold the car securely in place while it is being dumped, releasing it automatically as the cradle returns to its initial position.

Each set of clamps is operated independently so that the load on the top of the flange of the car is distributed evenly to all points of contact of the clamps. The amount of the weight exerted by the counterweights is so proportioned as to produce only sufficient holding power to prevent the heaviest empty car from leaving the platen rails when inverted, and this pressure cannot be exceeded due to the upward pressure of the car truck springs.

New Dumper Requires Only One Attendant

The car dumper is operated by one man from a cab at the approach end of the cradle, so elevated that the operator has a clear view of the dumper operations at all times. Power for the car dumper is supplied entirely by a single electric motor, connected by suitable mechanism with the heavy gear segments which partially surround the cradle at each end. This motor, which is a 100 hp. unit driven by alternating current, is controlled by a single lever, supplemented by magnetic control and limit switches for slow-down operation and for cut out in either direction.

The motor is also provided with a magnetic brake so arranged as to take hold as soon as the controller is turned to the off position, holding the cradle at any point in its travel. In addition to this magnetic service brake the motor is also provided with an emergency brake, controlled by a lever in the operator's cab.

The new car dumper will handle all sizes and capacities

of open top railway cars, the clamping arrangement adjusting itself automatically to the size of the car received in the machine. In its operation it is necessary only to place the car in the machine and turn the control lever. The car is then inverted, discharging its contents into a hopper beneath. When dumped, the car is returned to its original position by simply turning the control lever in the opposite direction. With the single exception of starting the dumper in either direction, all of its complementary functions are entirely automatic.

Electric Mule Places Cars in Dumper

The new car dumper, which is designated as No. 2, is located adjacent to coal loading pier No. 1 and is supported on an elevated structural steel platform. Both the approach and run-off ends of the dumper are connected with the wharf level by steel trestles, the approach trestle being on an incline of 15 per cent. In the operation of the new facilities, loaded cars from the gravity yard at the pier are pushed up the approach incline and into the car dumper by means of a mule which is operated in the usual manner by means of a haulage and a tail rope, both ropes being wound on a drum forming a part of the haulage machine. Power for the operation of the mule is furnished by a 450-hp. electric motor tied into a 300-kw. generator, which in turn is direct-connected to a synchronous motor operating on a 500-volt, 3-phase, 25-cycle power supply. The movements of the mule are regulated by the automatic control of the field in the generator, the various slow-downs and stops being effected by a traveling-nut type limit switch. A master control switch is also provided for operating the starting and stopping switches of the electrical equipment, this being located in the car dumper operator's car at the end of the dumper.

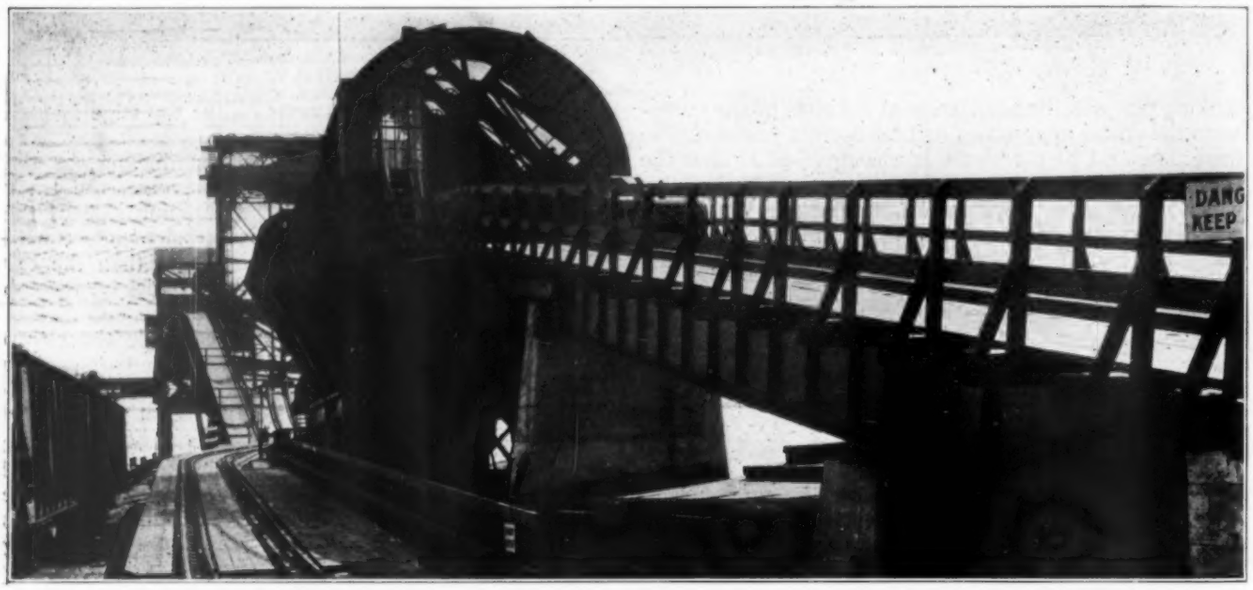
Directly beneath the car dumper, and confined within the steel structure supporting it, is a 75-ton twin steel hopper into which the coal is discharged from the cars. This hopper is so located beneath the dumper that the coal being dumped is restrained in falling when leaving the car and fills the hopper gradually as the dumper revolves, thereby reducing breakage to a minimum.

Long Conveyor Belt Carries the Coal to the Loading Plant

The bottom of the hopper is provided with two outlets which direct the coal to a single 54-in. steel apron feeder, which in turn passes the coal to a 60-in. conveyor belt for carriage to the boom conveyor for loading ships. The feeder draws the coal from the hopper in a smooth steady stream, without drop, and carries it longitudinally for about 40 ft. where it discharges the coal into a chute so inclined as to give the coal the proper velocity for feeding the 60-in. conveyor belt. The feeder is driven by a 60-hp. alternating current motor and can be operated at a high speed of 200 ft. per minute or a low speed of 100 ft. per minute. At the higher speed, the capacity of the feeder is approximately 2200 tons per hour.

The 60-in. conveyor, receiving its load from the chute at the head end of the feeder, is carried by troughing idlers on roller bearings, up an incline of 14 per cent and then over a short horizontal run to the coal-loading tower which is about 500 ft. from the car dumper. At the end of the belt conveyor, the coal is discharged directly into a 54-in. apron conveyor carried by a boom on the loading tower. From this latter conveyor the coal is discharged through a telescope chute suspended from the outer end of the boom and extended into the boat to the trimmer. The 60-in. conveyor is driven by tandem pulleys geared directly to a 300-hp. alternating current motor, and is so equipped with change speed gears that the speed of the conveyor may be varied from 650 to 350 ft. per minute. The plant is also equipped with an electric boat haulage machine, the cables of which are attached to, and move the largest vessels during the process of loading. The speed of boat haul is about 40 ft. per minute.

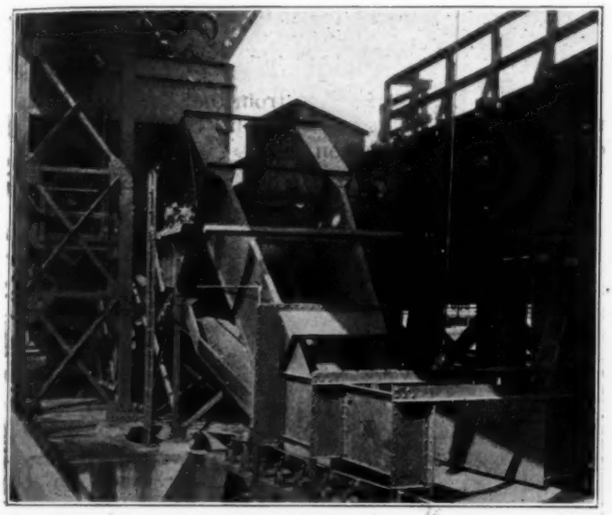
With this equipment, practically the entire operation of the Western Maryland's new facilities are controlled by two men, one in charge of the operation of the car dumper, and the other in charge of the operations at the loading end of the plant. Other men required at the plant include the usual car riders who handle the loaded cars from the loaded car yard and return the empty cars to the empty car yard.



The Approach End of the Dumper, Showing the Substructure and the Empty Car Return Track

In operation, the loaded cars run by gravity from seven loaded car tracks, having a combined capacity of one hundred and ten 40-ft. cars, to the mule pit, from which point they are pushed up a 15 per cent incline plane to the platen of the car dumper. The empty car previously dumped is pushed off by the incoming loaded car, and the empty car runs down a 12 per cent. incline plane to a kick-back, at which point it automatically switches itself and runs by gravity to the empty car storage yard.

The outstanding features of this machine are its low electric power demand for operation, the absence of degradation in handling various sizes of coal, and a reduction of 15 per cent in the man power required. Owing to these features and the absence of excessive cables



The Dumping End of the Apron Feeder Which Discharges on to the Belt Conveyor

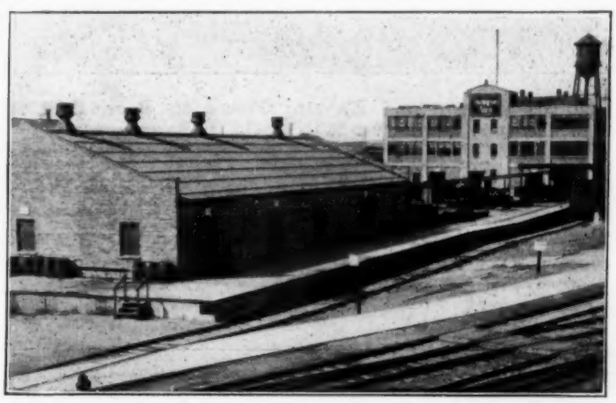
and other complicated mechanism, a substantial reduction in maintenance costs is being effected.

The new facilities give the coal handling piers of the Western Maryland a total capacity of 5,000 long tons per hour, and a total capacity of 120,000 tons for a 24-hour working day. Two large vessels, each up to 600 ft. in length, can be loaded simultaneously and independently on opposite sides of the pier.

The new car dumper at Port Covington, together with the auxiliary conveying equipment, was furnished and erected by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, while all of the electrical equipment used in the installation was furnished by the General Electric Company, Schenectady, N. Y. The approaches to the dumper, the run-off tracks and all foundation work was constructed by the forces of the Western Maryland, and the entire project was handled under the general supervision of H. R. Pratt, chief engineer of the Western Maryland.

New Oil and Paint Store to Save 50 per cent

THE Chicago Burlington & Quincy, has completed an oil house and paint store at Aurora, Ill., to which interest attaches both for its labor savings features and for the high return promised on the investment. The building, which has been contemplated for several years, is the last unit in connection with the new general store facilities constructed at that point. Built at a cost of $40,000, the new oil house provides for the consolidation of stocks of various oils and the consequent reduction in the amount



Oil House from Shipping Side—General Store in Background.

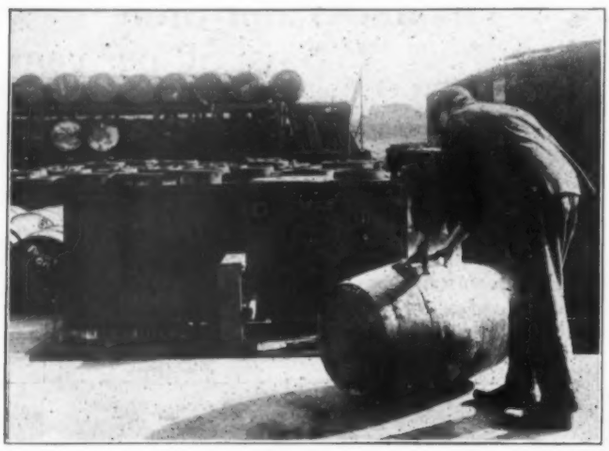
carried, and also makes it possible to purchase in tank-car lots large quantities of oil formerly purchased in the drums on which the owners charged rental. Total economies are expected to reach $20,500 the first year or 50 per cent on the investment.

The new oil house is built on an extension of the concrete platform surrounding the general storehouse, and consists of a one story brick building, 50 ft. wide and

Receiving Side of Oil House—Oil Drums Stored on Platform, Paint Barrels in Basement Below Platform.

100 ft. long and also a basement 130 ft. wide below the platform. By having the oil house platform built as a continuation of the storehouse platform, the storehouse tracks, one on each side of the platform, also serve the oil house.

The construction is similar to that which has proved satisfactory in this company's reclamation plant, consisting of brick walls with a tile roof supported on steel



Trap Door Open and Elevator Placed to Receive Paint Barrel and Lower it to Racks in Basement.

trusses and with all doors and sash of metal. This building is divided by tile fire walls into three rooms, a pump room 20 ft. wide and 50 ft. long, a barrel washing room 15 ft. wide and 50 ft. long, and a storage room for small lots of paint and painter's supplies, while the base-

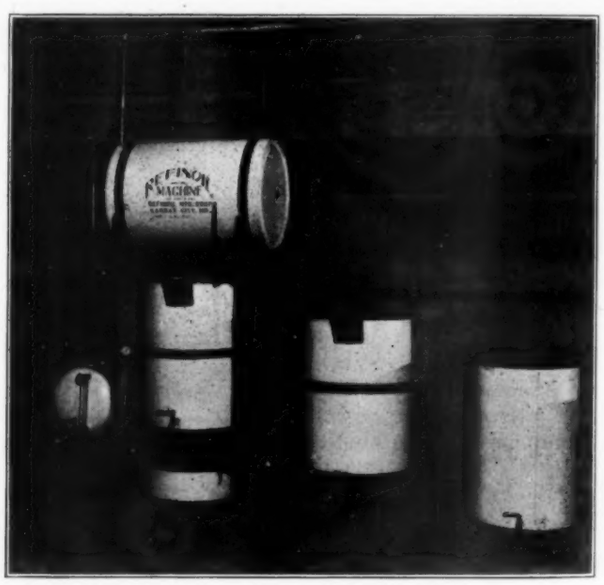
Paint Storage Room with Movable Barrel Hoist

ment is divided into two rooms, each 65 ft. wide and 100 ft. long.

The space immediately below the building contains 30 oil storage tanks with capacities ranging from 300 gal. to 15,000 gal. each. These are filled by gravity from tank cars brought to the oil house and the oils are issued by means of Bowser self-measuring pumps, installed on the first floor, this equipment also including an electrically operated pump, for filling 50 and 100-gal. barrels. Oil barrels and acid carboys are stored outside on the wide platform.

Quick Handling of Barrels

The new store has a feature in the construction and equipment provided for the handling of barrels of paint, chemicals and other material for which inside storage is advisable. That half of the basement immediately below the platform is utilized for the storage of this material, where there are 16 metal racks capable of holding 960 barrels. An aisle extends crosswise from the building line to the loading track and the racks extend each way from this aisle. In the platform above this aisle are a series of trap doors affording openings opposite the end of each rack, and a portable electric elevator is operated in the aisle so that the barrels or drums can be lowered into storage by bringing the elevator into position under the proper trap door, opening the trap door and lowering the barrel by elevator to the proper rack. The racks slope downward from the center aisle so that the barrels roll into position under the force of their own weight. Their removal is effected by moving the elevator around to the opposite end of the racks and thence

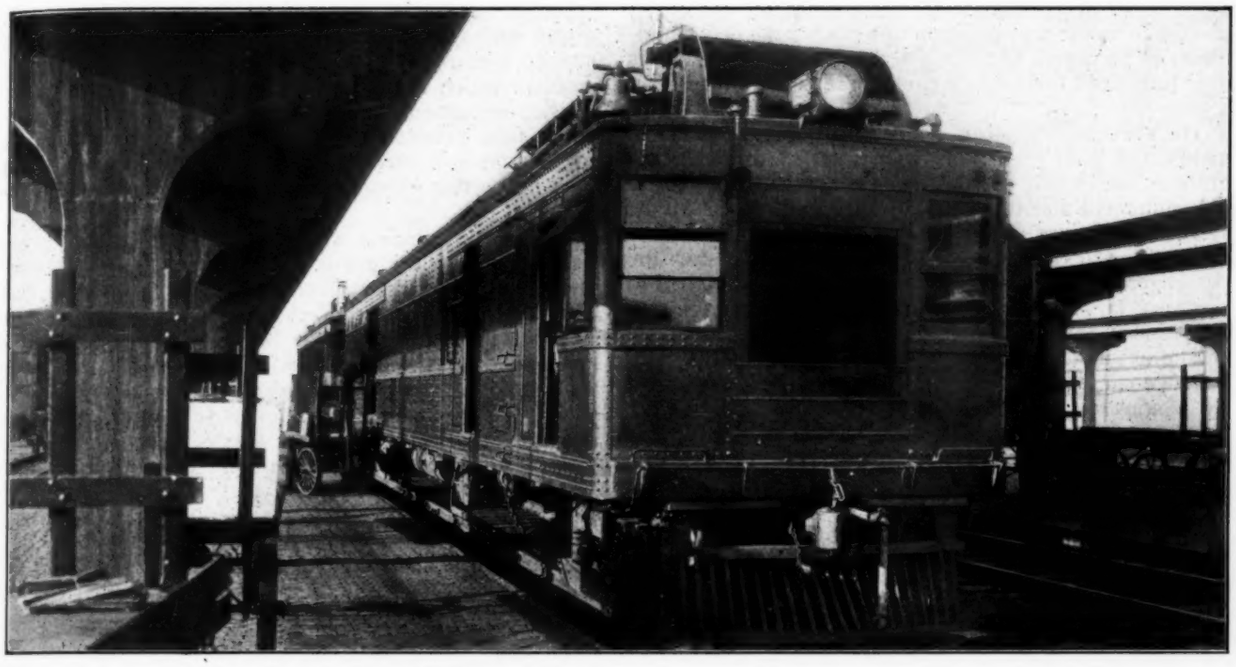


Equipment for Reclaiming Lubricating Oil

along the wall of the basement to the trap door nearest the track where the drums can be rolled directly into a car as they are brought to the surface. Taking the barrel from the opposite end of a rack assures the use of the oldest stock first.

Reclaim Lubricating Oil

Another feature of the new oil house is the installation of a device for refining crank-case oil removed from trucks, tractors and rail motor cars. The equipment is installed in the basement and consists of a system of the tanks for refining the oil by a process of distillation and filtration. The capacity is 50 gal. per day. All crank-case oil is now sent to Aurora for refining. While the machine has only been operated for a short time its performance indicates a saving between $300 and $400 per month. The new store is operated under the general direction of J. G. Stuart, general storekeeper.



Gas-Electric Car and Trailer on Chicago, Burlington & Quincy at Aurora, Ill.

Gas-Electric Motor Cars as Applied to Steam Railroads

A presentation of the desirable features of differential field-generator control

By P. M. Gillilan
Railway Department, General Electric Company

In recent years many of the serious light traffic and branch line problems of steam railroads have been solved by the use of gas-electric motor cars. Railroads have been using rail cars, both gasoline and gas-electric, for the past 24 years. The success of these cars has been varied, particularly because of the small number on each railroad. There never were enough cars on each line so that the railroads could standardize on this type of motive power, with the result that the officers did not take the serious interest in their operation which is being manifested today. The modern gas-electric car has made rapid progress during the last four years, and there are now more than 300 in service or on order on the Class I railroads of the country. This, of course, does not include a large number of small mechanical gasoline cars which were quite common prior to the full development of the modern gas-electric type.

The attractive features of gas-electric cars which have popularized them with railroad men are the low cost of operation, simplicity of operation, cleanliness with the attendant increase of passenger traffic, reduction in maintenance and operating crews necessary to maintain trains on these light traffic runs, and the reliability of operation, thereby eliminating standby equipments.

Gas-electric cars are in service in all parts of the country and are handling light traffic runs with mileage up to 400 miles per day. They are operated usually in two-car trains, handling a light passenger or combination baggage car. The engine equipment varies in horsepower from 135 to 400, and some cars have two engines. The power available in such cases varies from 240 to 800 hp.

The cost of operation of these motor car trains is from 35 to 50 cents per train mile, including interest and depreciation. The table shows briefly the average comparison of an 85-ton, two-unit, 275-hp. gas-electric train compared with the steam train which it replaced.

Cost per Train Mile—Cents

	Steam Train	Gas-Electric
Wages—engine and train crews	28.5	17.9
Fuel—coal or gasoline	28.0	18.01
Lubricant	1.01	1.01
Terminal—inspection and enginehouse expense	2.0	1.25
Labor—cleaning, icing and watering	1.18	.92
Miscellaneous supplies	0.75	0.52
Repairs—labor and material, total train	21.0	5.0
Sub-total	82.5	34.66
Depreciation at 10%	....	7.15
Interest at 6%	....	4.3
Grand total	82.5	46.11

These fuel costs are based upon coal at $4.00 per ton and gasoline at 12 cents per gallon, and are conservative figures. There are some railroads which have been able to operate similar gas-electric car equipments at a much less expense, and on the other hand there are many railroads which are operating their light traffic and branch line steam trains at considerable more expense per train mile than that shown above. In comparing the total amounts, it is obvious that the saving in gas-electric motor car operation over that of steam in the course of

a year is an appreciable item. Many railroads are saving enough in motor car operation to write off the new equipments in from two to three years, and in some instances they have been known to write off the motor cars within a year.

The average local steam trains in this day of the automobile and good roads, particularly on hot summer afternoons, are usually avoided by passengers because of the old equipment and the attendant dirt and cinders of the steam locomotives. Many railroads report that the use of gas-electric cars on such runs has stimulated the passenger traffic to such an extent that they have had to purchase larger and more powerful gas-electric cars to take care of the increase in business.

The usual steam train consisting of a locomotive with baggage car, smoking car and passenger car is operated by a crew of five men—engineer, fireman, brakeman, baggageman and conductor. Gas-electric cars are being operated without the fireman and brakeman.

Car Should Be Designed as a Unit

The gas-electric car is considered by some to be a piece of electrical equipment with an incidental engine and car body, by others as an engine with an incidental car body and electric transmission equipment, and still by others as a car with an incidental motive power equipment. These points of view are taken by the several contributing manufacturers of the gas-electric motor car. Some railroad operators have tried to assemble parts from different concerns into an old railroad coach and have it operate successfully as a rail car. These people can testify as to the importance of purchasing a finished motor car in which all the various functions have been properly engineered into the finished product. It is difficult to take an engine, generator and traction motor without careful study and engineering knowledge and make them work properly and economically in a smooth and reliable manner. The last four years have resulted not only in the development of modern rail cars, but in the development of recognized expert motor car builders.

Control

The early gas-electric cars consisted largely of the same equipment which is furnished in the modern types. The principal differences are the modern light-weight, high-powered engines and the simplicity of the automatic characteristics of the control.

Between the years 1906 and 1917 the General Electric Company made gas-electric cars with hand-manipulated control, in which the operator varied the generator field resistance through several points on a controller. It took a man with considerable knowledge and skill to operate these cars, since an improper field setting might either over-excite the generator and in turn overload the engine, or else make such a weakened field that the engine would not be loaded and would therefore speed up and race.

The control which is being used on the modern car differs from the original hand control, in that the regulation of the generator field with respect to the load is taken care of automatically by an inherent characteristic of the generator. This is accomplished by the differential generator control in which the power output of the generator is practically constant throughout the full working range; that is, the product of voltage and current between extreme ends of the curves is constant. Because of the simplicity of the modern generators, it is possible for gas-electric cars to be placed in service without the necessity for the practice and skill which was required of the old cars.

The internal combustion engine is a maximum rated machine. It can be loaded to this limit at the maximum torque and speed; beyond this point the speed falls off rapidly with reduced horsepower. This is the electrical problem which must be overcome with electrical transmission equipment, and which is answered by the differential field generator which has a characteristic curve of voltage and current so designed and adjusted that it is impossible either to overload or underload the engine.

It is no uncommon thing for the mechanical driven vehicle to have the engine forced down to a very slow speed and even stalled due to overload. With the gas-electric car and the differential field generator, it is possible, though hardly desirable, to set the brakes on the car and open the throttle wide with the controller in any operating position. Even under this abnormal condition the engine will turn up to full speed and carry the load without distress, or evidence of overwork. This can be done at a higher maximum tractive effort than with mechanical drive.

Differential Field Control

Differential field control is extremely simple; it requires no auxiliary contacts, regulators or other devices which must be maintained and which are likely to be a source of considerable trouble. The over-all efficiency of the control, within the limits of the engine horsepower, is the equal of any of the various types of control offered today and has the additional desirable feature of simplicity and an inherent generator characteristic.

The general scheme of operation of the gas-electric car is quite similar to that of the steam locomotive, with the engine throttle, reverse lever and the air brake. The engine throttle controls the engine, the reverse lever on these cars is the controller which arranges the series parallel and reduced field operating connections to the motors, and the air brake, of course, is the usual type. The mechanical energy of the engine is transformed to electric energy by means of the direct-connected generator. This electric energy is carried through the control and passed to the motors on the car truck. The generator has a direct-connected exciter which supplies power to the generator field and current to charge the storage battery. The storage battery is used to supply car lighting and also energize the exciter field and thereby obtain a more constant voltage from the exciter than if it were self-excited. The control between the generator and the motors can be either of two types—the drum control or the remote control. For drum control the type "K" controller is used in which all connections between the generator and motors are taken care of by one drum control box. The remote control consists of a series of pneumatically operated contactors with a small master controller. These contactors are mounted on the panel and located at convenient places in the engineroom. While the manufacturers have no definite choice in the type of control, the drum type up to the present time has been more generally used, particularly on cars of the middle west.

The motors on the trucks are arranged for three operating positions—series, parallel and reduced field operation. In starting a car the controller is placed on the series or starting position and the throttle opened to full speed of the engine. At approximately 12 m.p.h. the controller can be pulled from the series to the parallel position at full engine power and the motors are then connected in parallel at which point the car operates until it accelerates to approximately 25 m.p.h. The controller is then changed to the next shunt field or reduced field running point. It is an advantage to arrange

the motors in series which corresponds to approximately half voltage and full torque in order to give the car a quick acceleration. Full motor torque with the motors in parallel gives the increased speed necessary to accelerate the car to a higher value.

Reduced Weight

The basic requirement of equipment for gas-electric cars is light weight. It has been found that by shunting of the motor fields at the higher car speeds, a light compact motor with high horsepower can be obtained. It has, therefore, been accepted that it is advantageous to railroads to have the compact lighter motors and use the additional operating point on the controller for the higher car speeds. If motors are required which will have an inherent characteristic of a steep speed curve in order to eliminate the third or reduced field running position, it will be necessary to supply a much larger motor due to the large air gaps, in order to give this characteristic. This means a larger truck and longer wheelbase, with the attendant increase in weight.

Relation of Engine and Generator Characteristics

If the engine horsepower is plotted between volts and amperes, it will show an hyperbola, one end of which is high voltage and low current and the other end high current and low voltage. This curve is the theoretical output line of the engine, under which lies the output characteristic of the car.

It is logical to assume that the ideal generator characteristics should begin with a maximum voltage determined by the safe operating and insulation characteristics of the generator and motors. It is also fair to assume that the voltage should be held constant at increasing current loads until the line touches the engine curve. The ideal characteristics will then follow the hyperbola of engine power with reducing voltage and increasing current to a point which represents the maximum commutating limits of the generators and motors, or to a point in which the current is limited by the resistance of the control circuit. This condition cannot be realized; first, on account of the losses in generator, amounting to approximately 10 per cent; second, on account of lack of a simple, reliable device which is sensitive to both the torque and speed of the engine. Unless it responds to both of these primary engine functions, it will not have an inherent characteristic, but will require constant adjustment and hand manipulation. By use of the generator differential characteristic, the engine driven generator curve follows the hyperbola of engine power thruout the normal operating range of the car and falls away gradually at the full running speeds. The maximum speed between stations on the average motor car run is approximately 42 m.p.h. and the loss of engine power is from two to three per cent. The full running speed of the average motor car train is about 48 m.p.h. At this point the loss is but seven to eight per cent. This is the generator characteristic which results from the variations in speed and torque of the engines found in actual operation. Most engines are provided with a governor which cuts off the fuel supply when the engine increases 5 to 10 per cent above the engine speed. It is, therefore, obvious that when the engine is unloaded slightly, the speed increases and the governor begins to close off the fuel supply. Careful analysis of engine characteristics shows that the horsepower output remains constant under these conditions, and that there is not the rapid falling off of generator power which is usually expected of differential generator control. This condition applies at both extremes of the generator curve.

Advantage of Simplicity

Operating schedules, therefore, show that the loss of 2 to 3 per cent as obtained in the average motor car schedule is slight in comparison with the overall losses which are inherent in the generator control and motors due to their respective efficiencies. This is a minor consideration, particularly on account of the simplicity and lack of attendant complication, thereby insuring increased reliability of operation. It is said that a single motor car failure on a railroad represents a cost of approximately $300, on the average. To offset this loss, the saving will have to be increased considerably due to one failure on the railroad on account of complications of equipment.

Air Supply

The majority of cars in service, as stated before, are operating in two car trains and weigh approximately 85 tons total. The air supply for these trains is usually obtained from a 25 cu. ft. air compressor. The compressors are motor driven and are connected across the generator terminals. It has been found that this arrangement with the up and down voltage characteristic of the generator in the usual light traffic passenger runs, will maintain full air brake supply on the car at all times. There are a few cases, however, where descending grades require the operation of the engine at full speed in order to provide power for the air supply. In such cases increased reservoir and compressor capacity is provided to give the required air supply. It is definitely accepted that the air brake requirements in light passenger service are quite different from those required of motive power units in freight or switching service. It is found that the air brake problems must be solved largely from the point of view of the service application of the equipment.

In regard to engine cooling, most engines are provided with the forced draft radiator. The cooling fans are operated by a motor which is connected directly across the generators in the same manner as the air compressor motor.

The majority of cars now in service are operating from one end only, but double end control is also being provided on a large number. Gas-electric cars have not been placed in the heavy traffic sections to any great extent where multiple unit operation is required. The manufacturers of electrical equipment nevertheless are prepared to furnish the multiple unit operating equipment wherever conditions demand, although there are several attendant problems in this connection which are still the subject of development. One of the most prominent problems is the question of indicating the engine condition when the operator of the car is at a distance from the engine, particularly the indication of enginewater temperature, oil pressure, etc. The problem is not entirely new, however, as there are several oil-electric locomotives in the process of construction, and a few in service which are arranged for multiple unit operation.

Co-operation Required

In conclusion, there are a few railroads which have definitely accepted gas-electric cars as a solution to their light traffic problems. These railroads have purchased cars in large quantities and will continue to do so, until their light traffic lines are completely motorized. It is expected that these railroads will help the manufacturers and car builders to accomplish full and complete development of these cars for the service for which they are intended on large railway systems.

The I. C. C. And Its Work*

Including some remarks on "political nibbling"

By Hon. B. H. Meyer
Interstate Commerce Commissioner

WHAT was formerly referred to as the railway problem has more recently been recognized as a bundle of problems. It has always been a bundle. There are scores of problems. I shall endeavor to give you a little of the background of the Interstate Commerce Act and comment upon several phases and incidents connected with the work as laid out in the law.

Picture to yourselves this country with its three million square miles of area, with its wealth and resources in agriculture, mines, forests, and manufactures; place into this vast area some 250,000 miles of line of railways with an additional 175,000 miles of second and other tracks; visualize the movement of more than 10,000 different kinds of articles which are carried in a vast number of trains every day from somewhere to everywhere; consider the millions of people interested in the production, distribution and sale of all these articles; and finally think of the millions of points of contact between all these commodities, each with its interested human attendants, and you will realize why these 125 millions of people must have some agency which will deal with these points of contact between them and the transportation systems which serve them. Every point of contact is a potential source for the development of differences. Out of the general feeling of the necessity of a disinterested agency to adjust differences grew the institution called the Interstate Commerce Commission. It is its function to settle these disputes, though some classes of disputes relating to railways are referred directly to the courts. Many can reach the courts only through the commission. The commission is an arm of Congress.

The Commission is in its 42nd year. Originally it was composed of five members. In 1906 it was enlarged to seven members, in 1917 to nine, and in 1920 to eleven. Perhaps I can convey some notion of the contents of the law by saying that some twelve or fifteen three-fifths courses, each dealing with a separate section of the work, would about cover the leading characteristics in a descriptive way.

Political Attempts to Control the Commission's Action

The commission has always been an independent body. It has nothing to do with politics and no political influence has ever determined its official action on any question. Occasional attempts to nibble politically at the commission, formerly were sometimes annoying but never harmful. It has remained for recent times to attempt to control commission action through political channels. These attempts were made boldly and at times with fury. Every one of them has failed. I do not believe they ever will succeed but it will be a sorry day for government if they ever should succeed.

Our procedure embraces in regular succession pleadings presenting the issues, records of sworn testimony made in public hearings, briefs by counsel, a proposed report by an examiner, exceptions by the interested parties, oral argument before the commission, and finally a decision arrived at in conference of the commission. If our decisions are thought to be in violation of law, there is an appeal to the courts. . .

Shall the commission continue to be an independent arm of Congress, doing its duty fearlessly and energetically in accordance with law, or shall it be made the victim of political threats and intimidations, the object of political nibbling or control? Shall it decide cases in the direction of the most powerful external influence and generally debauch justice, or shall it continue to be a body that dispenses justice according to law to the best of its ability? If the commission is to be influenced and controlled by external and political suggestions rather than by the considerations which have hitherto always controlled its official acts, it should be abolished.

The commission can be abolished, but who will then settle the thousands of controversies and by what processes?

Commissioners Should Not Be Sectional

Some say that the commission should be geographically distributed. Could anything be more subversive of justice? Decisions of the commission rest upon public records and not upon what members of the commission may have in their heads, perhaps acquired during childhood. What we need is men who have the capacity and the industry to learn to understand what the facts are in a controversy, no matter where the parties may reside, and the courage to act accordingly. The very idea of representation in such matters is contrary to a sense of justice and fair play. For 23 years I have worked constantly as one of a group of from three to eleven or more men. . . . A body which is representative in its functions must necessarily be large enough to insure proper representation of all the different interests which should be represented. . . . My experience points to seven as the number which combines the highest degree of efficiency in operation with the highest degree of soundness in conclusions. Where a commission acts through subdivisions as we do, a number larger than seven is required to furnish sufficient members for the necessary subdivisions. Eleven, our present membership, accomplishes this. Three men can act expeditiously and with respect to decisions that follow precedent or that do not involve momentous issues, can arrive at judgments which are likely to be sound. Five men require more time for an exchange of views but together they possess a sounder deliberative judgment and sufficient variety in point of view and methods of reasoning to be able to dispose of larger questions. Five can handle safely questions of large import. Issues that are novel or momentous can be disposed of better by seven men than by five because the seven collectively represent something which ordinarily five may not possess. Seven men require more time than five. Nine men ordinarily do not represent sounder points of view or a higher degree of deliberative judgment than seven and therefore add nothing to the quality of the judgments rendered. The

* From an address before the Wisconsin Chapter of Phi Beta Kappa, University of Wisconsin, at Madison, Wis., on May 17, 1928.

same is true of eleven men. Since both nine and eleven require more time than seven, the larger numbers diminish the efficiency of the body, but it is necessary to have a number larger than seven in order to provide the members of different divisions. We act through five or six different divisions, each composed of three men, the same men acting on different divisions. Bodies composed of larger numbers can not retain the same quality of mutual understanding, solicitude regarding the views of others, facility in arriving at conclusions which smaller bodies possess. Larger numbers affect the mental attitude and possibly mental processes.

Dissents in 39.8 Per Cent of Cases

While the commission was composed of five and seven members, the number of cases in which one or more commissioners dissented constituted 4.09 per cent of the total number of cases decided. During the years that the commission has been composed of nine and eleven members there were dissents in 39.8 per cent of all the cases decided by the entire body. Of all the cases decided by divisions of the commission, generally composed of three members each, there were dissents in 6.73 per cent of the total number disposed of by the divisions. These figures throw a significant sidelight on the psychology of increased numbers. In the Supreme Court of the United States, from the years 1910 to 1914 there were dissents in 13 per cent of the cases involving questions of public law and in 8 per cent of the cases involving private law. From 1921 to 1925 there were dissents in 27 per cent of the cases falling into the former class and in 4 per cent of the latter. These were the only figures available. Some commissioners dissent oftener than others. That is partly a matter of mental habit and disposition. More time for discussion might sometimes result in unanimity. Too much insistence on individual views means paralysis on the part of a commission as a functioning body. Many cases are difficult and closely balanced, but no matter how difficult and complicated a case may be, it must be decided. Orderly government is impossible without the processes employed. Only anarchists will refuse to abide by the results of these processes.

If it is thought that our decisions are contrary to law, well-established procedure makes it easy to bring the question to the attention of the courts. We exercise wide discretionary powers but everything we do must be done within the four corners of the law. We naturally aim to stay within the law. We have repeatedly made certain decisions in the hope that the legality of our action might be tested in Court in order that doubtful points of law might be cleared up.

For some years past we have rendered decisions in something like 1500 formal proceedings a year. Ordinarily there is a successful party and a dissatisfied party. Partisan agitation against the commission or certain of its members can avail nothing because such agitation can not possibly influence our official action. A political uprising in a state or a group of states can have no effect on us because what we do rests upon the law as it is and not upon the law as some people think it should be. The uprising should be directed toward Congress for a change in the law and not toward the commission.

The question of rates for the transportation of freight and passengers has continued to be the most important single subject with which we have been dealing.

. . . As time went on, changing conditions resulted in extending our jurisdiction over certain aspects of physical operation; safety regulations, and authority in the general field of service, especially during emergency. Other changes followed. About 15 years ago we were given authority to value the railroads of the country. The transportation act of 1920 extended our jurisdiction over the issue of securities, new construction, abandonment of existing lines, the grouping and consolidation of existing systems and other matters. It declared a legislative policy with respect to earnings and promulgated the doctrine "to foster and preserve in full vigor both rail and water transportation." Important amendments to the Interstate Commerce Act are now pending. As the country changes or as political views with respect to regulation change, additional changes will doubtless continue to be made.

There is little aside from general principles which is permanent in connection with the regulation of railroads. Even principles must be changed. Those who saw the wonderful centenary of the Baltimore & Ohio Railroad near Baltimore in the fall of 1927 will remember the remarkable succession of changes there exhibited in the type of locomotives, cars, track, and appliances during 100 years of development. Changes analogous to those in the mechanical field have taken place in other branches. Changes in the location of industries, the creation of new industries, new discoveries, new railroads, new relations among railroads, markets, marketing conditions, methods of distribution, areas of consumption, all have their effect on the rate structure of the country. From many standpoints it would be desirable if a rate structure could be devised that would be fixed and permanent. A changing country makes this impossible. Certain rates and rate principles have endured through decades. Others for only a brief period. Permanency in rate work is something like permanency in dental work, which generally lasts until the next toothache appears. The universal distance tariff has the advantage of simplicity although the calculation of distances over many different competitive routes often presents a complicated and difficult problem. . . . The commerce of the country can not be adjusted to so simple a scheme of making rates. With respect to certain kinds of freight, especially those things that are, in figurative language, produced everywhere and consumed everywhere, a simple distance scale can be used satisfactorily. But in dealing with many of the great staple commodities, the application of a rigid distance rule has been stubbornly resisted and for valid reasons. Generally speaking, and other things being equal, the short distance shipper prefers an increase in rates by percentage because the volume of his rate being smaller than that of his more distant competitor, a percentage applied to both will impose upon the long distance shipper a greater increase expressed in cents. On the other hand, when rates are to be reduced these two classes of shippers reverse their positions. The short distance shipper prefers the numerical method because the same number of cents deducted from both rates will leave his competitor with a relatively higher rate than that which will be imposed on him. Which of these methods is inherently the just and reasonable one? The question can not be answered. . . .

What the Traffic Will Bear

The rate on citrous fruit from California is the same to Denver as it is to Chicago and New York. Roughly speaking Chicago is twice as far as Denver and New York three times as far. Now, the one-idea, simple-rule, distance-scale man finds it easy to point out the absurdity of charging as much for hauling fruit 1000 miles as for 2000 or 3000. Does not every one know that it costs two and three times as much for the greater distances? Many other statements can be made against this huge blanket, as such a rate is called, and which is an extreme illustration. Applied to other commodities

and under other conditions such a blanket rate might be as wrong as it looks but this blanket rate has been attacked in proceedings before us many times with respect to the amount of the rate, but in all these proceedings all the parties, growers, carriers and others, have united in asking us not to disrupt it. Absurd as it can be made to appear on theoretical grounds, and unjust as it might be in other cases, it has stood the test of experience and those most concerned desire to retain it. Under it the business has developed to large proportions. In a sense, it has been a wonderful thing for the country. Theoretical dogmas should not be permitted to destroy beneficial practical operations. It may be that the rapid development of new citrus fruit areas in other parts of the country, with the resulting changes may some day compel a disruption of the blanket. If so, the facts in the situation then developed will be spread upon a public record and these facts, and not theoretical rules of rate-making, will dictate what the rate structure shall be for the future. Perhaps this is sufficient to indicate why some single simple rule of rate-making can not do justice to the thousands of competing producers and consuming areas in the many different lines of activity in a great country like ours. Many different methods are required to meet many different situations. Neither our economic life nor government is so easy and simple that a single rule will suffice.

It has often been pointed out that a single lifetime connected the political revolution, symbolized by our Declaration of Independence, with the industrial revolution, in which the railroads played such an important part. It has taken much less than a lifetime to connect the railroad with the automobile, the airplane, and the radio. These have brought upon us a series of revolutions which in retrospect may seem like a combined political, industrial, and social revolution. The automobile, the airplane, and the radio have helped speedily to relieve many of the misfortunes of war. The expression "Ambassador of Good Will," with which the whole world has become familiar, in itself suggests a world-wide development which would have been impossible without the airplane. What the effect of the automobile and of these other agencies will be, nobody can foresee. In 1920 there were in round numbers 8¼ millions of registered passenger automobiles, and a little over 1,000,000 of trucks in the United States. For 1927 the number had risen to 20¼ million of registered passenger cars and nearly 3,000,000 of trucks. Great systems of public highways have been developed and are still being developed aggressively, which together with the motor vehicles operating over them, represent an estimated investment which exceeds by several billions of dollars the estimated aggregate investment in the railroads in the United States. It is the good fortune of all of us to be living in an age in which these things are taking place and it is peculiarly your good fortune to begin your careers in such a time. Life has never been more worth living.

THE SOUTHERN PACIFIC CENTRAL MAILING BUREAU at 65 Market street, San Francisco, handles each year more than 25,570,000 letters and other enclosed messages. Each day approximately 13,000 pieces of railroad and U. S. mail arrive and 8,000 pieces are dispatched; 18,000 re-use envelopes arrive or are dispatched by railroad mail, and 1,200 pieces are delivered by messenger in the city's business district. Within the general offices 2,000 pieces of inter-departmental correspondence received and delivered daily. This bureau has a staff of 20 employees who in addition to handling mail have charge of the pneumatic tube system through which approximately 4,000 messages and other documents are cleared daily.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading exceeded a million cars for the second time this year during the week ended May 19, when the total was 1,003,497 cars. This, however, was a decrease of 24,001 cars as compared with the corresponding week of last year and a decrease of 35,573 cars as compared with 1926. Miscellaneous freight loading, 394,656 cars, showed a slight increase as compared with last year, but all other classes of commodities showed reductions. Coal loading was 8,009 cars less than in the corresponding week of last year and ore loading still showed a decrease, of 9,907 cars. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, May 19, 1928

Districts	1928	1927	1926
Eastern	238,389	242,520	250,234
Allegheny	265,190	209,880	211,941
Pocahontas	56,565	60,960	57,055
Southern	146,872	153,491	148,697
Northwestern	150,071	156,970	158,099
Central Western	133,031	133,021	138,864
Southwestern	73,379	70,656	74,180
Total Western Districts	356,481	360,647	371,143
Total All Roads	1,003,497	1,027,498	1,039,070
Commodities			
Grain and Grain Products	38,357	38,408	39,633
Live Stock	25,246	28,385	26,886
Coal	153,300	161,309	165,218
Coke	10,140	10,544	11,868
Forest Products	68,349	72,359	77,130
Ore	52,003	61,910	62,121
Merchandise L.C.L.	261,446	261,686	265,745
Miscellaneous	394,656	392,897	390,469
May 19	1,003,497	1,027,498	1,039,070
May 12	1,001,983	1,029,424	1,029,748
May 5	979,662	1,024,761	996,216
April 28	961,928	1,021,576	995,508
April 21	944,694	950,545	973,158
Cumulative total, 20 weeks	18,512,885	19,498,397	19,097,465

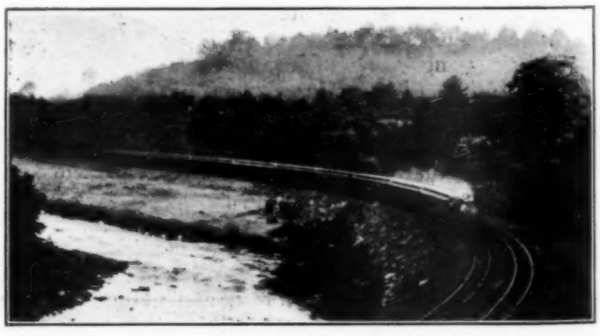
The freight car surplus for the week ended May 15 averaged 299,629 cars, a reduction of 2,268 cars as compared with the preceding week. The total included 117,244 coal cars and 131,939 box cars.

Canadian Car Loadings

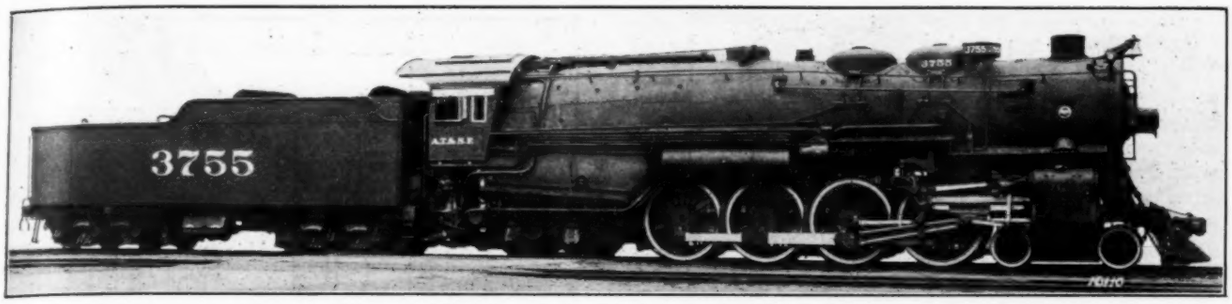
Revenue car loadings at stations in Canada for the week ended May 19 totalled 68,993 cars, a decrease from the previous week of 453 cars, but an increase over the same week last year of 7,934 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
May 19, 1928	68,993	41,287
May 12, 1928	69,446	41,601
May 5, 1928	64,278	42,145
May 21, 1927	61,059	38,847
Cumulative Totals for Canada		
May 19, 1928	1,262,320	804,372
May 21, 1927	1,210,572	784,511
May 22, 1926	1,119,467	750,571

* * *



On the B. & A. in the Berkshires



Atchison, Topeka & Santa Fe 4-8-4 Type Locomotive, built by Baldwin Locomotive Works

Santa Fe 4-8-4 Type Meets Expectations

Shows high capacity and fuel economy—Track stress limited by careful weight distribution and cross counterbalancing

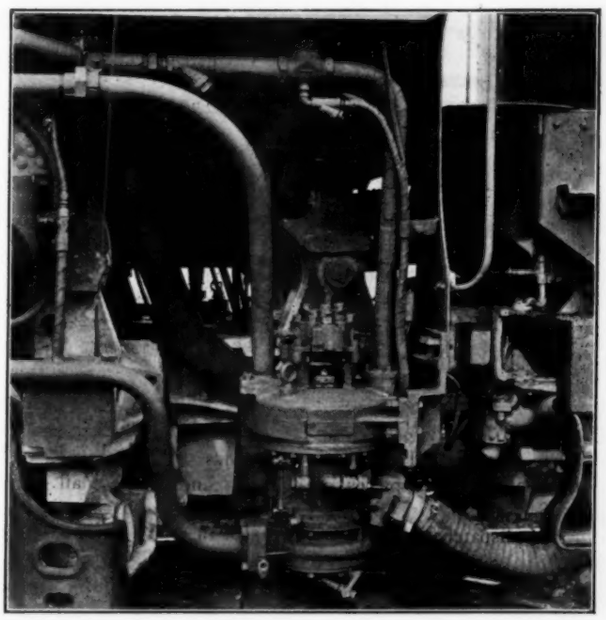
WITH the principal object of handling heavier passenger trains faster and with less unit fuel consumption, the Atchison, Topeka & Santa Fe designed, and placed in service during the past year, 10 modified Mountain type coal-burning locomotives of 4-8-4 wheel arrangement, known on the Santa Fe as the 3751 class, and numbered from 3751 to 3760 inclusive. These locomotives, built by The Baldwin Locomotive Works, are of the two-cylinder single-expansion type, equipped with 30-in. by 30-in. cylinders and 73-in. driving wheels, and develop 66,000 lb. tractive force at a boiler pressure of 210 lb. without the aid of a booster.

The new locomotive is notable for high boiler capacity, evaporating in one test an average of 6.74 lb. of water per lb. of coal when burning low-grade Colorado mine run at the rate of 4,125 lb. of coal an hour. The combustion-chamber firebox, with a total grate area of 108 sq. ft. and round-hole table grates, is designed to assure a low rate of firing per sq. ft. of grate area and as nearly complete combustion as practicable before the gases pass into the flues. In order to accommodate this large firebox, a non-articulated four-wheel trailing truck, which has been in the process of development on the Santa Fe since 1919, is applied. Driving axle loads up to 70,600 lb. are used on certain pairs of wheels, yet without excessive rail stress on either tangent track or curves, due to careful spring equalization, proper counterbalancing of the reciprocating and revolving weights and cross counterbalancing the revolving weights on the main wheels to offset the effect of these weights moving in different planes.

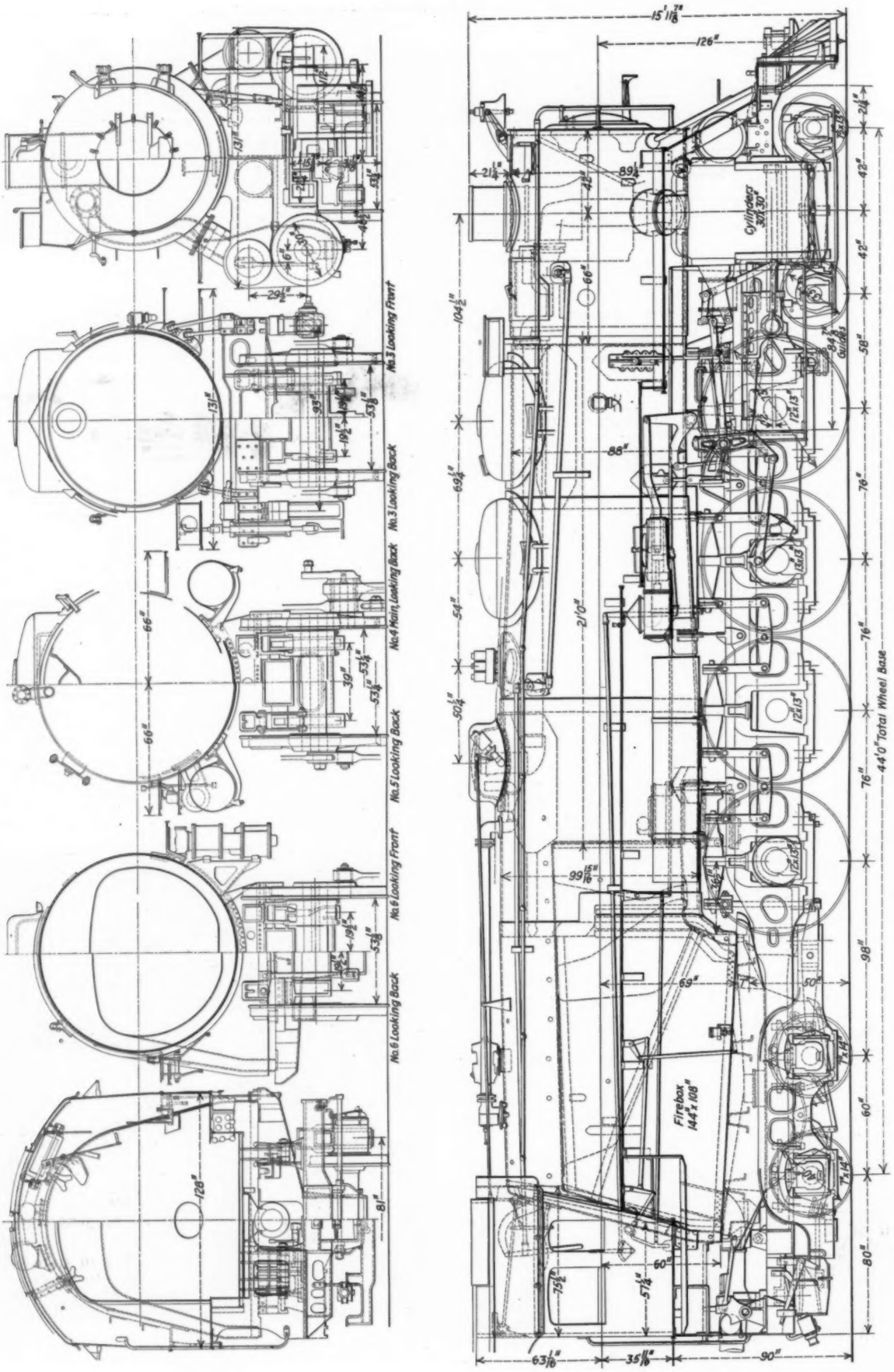
Favorable Operating Results Secured

Operating results secured with the 3751-class locomotive under actual service conditions have exceeded the expectations. This locomotive has demonstrated the ability to start 26 cars of heavy modern equipment on level track, or 15 cars on a 1.13-per-cent grade, in the latter case accelerating to a speed of 20 to 25 miles per hour in a distance of 15 car lengths. In the mountain districts of Colorado, New Mexico and Arizona, the locomotive handles 15 cars over grades up to two per cent and 9 cars over the 3½-per-cent grade of the Raton mountains, without a helper. Sixteen-degree curves can be negotiated. The locomotive is said to handle easily, accelerate rapidly and ride easily, especially on curves, which the locomotive is designed to pass with a minimum of flange and rail stress and nosing.

In general, because of slack business, the new locomotives have not been operated to full capacity since being placed in service and, consequently, maximum results with respect to fuel economy could not be expected. A good indication of their performance is afforded, however, by the results of comparative tests of locomotive No. 3751 and locomotive No. 3714, a previous Santa Fe Mountain type locomotive, on the 347.5-mile run between La Junta, Colo., and Albuquerque,



The Elesco Centrifugal Feedwater Pump Located below the Cab



Elevation and Sections of the Santa Fe 4-8-4 Type Locomotive

N. M. These tests were made during the latter part of 1927, operating in both directions between the two points mentioned. The results, shown in Table I, are

Table I—Comparative Test of Locomotives 3714 and 3751 between La Junta and Albuquerque—Average of Five Round Trips Burning Mine-run Coal

	Loco. 3714	Loco. 3751	Percentage in favor of Loco. 3751
Total time, hr.	11.47	11.65	——
Dead time, hr.	1.32	1.72	——
Running time, hr.	10.15	9.93	——
Speed, m.p.h.	34.25	35.0	2.2
No. stops	12	13	— 7.70
No. cars	10.5	14.5	38.1
Train tonnage	782	1,037	33.30
1,000 ton-miles	263.9	350.4	32.50
Coal used, lb.	59,640	48,060	19.40
Water used, gal.	33,520	35,370	— 5.50
Million foot lb. work	13,380	18,537	38.60
Coal per 1,000 ton-miles, lb.	226.2	138.6	38.7
Water per 1,000 ton-miles, lb.	1,058	930	12.1
Coal per million ft.-lb., lb.	4.46	2.55	42.8
Water per million ft.-lb., lb.	20.7	17.4	15.95
Lb. water per lb. coal	4.70	6.74	43.40

Note: Values marked thus (—) are in favor of Locomotive 3714 which, for an accurate comparison, should be credited with about 10 per cent better showing in all fuel factors because of not being equipped with a feedwater heater.

the averages of the performance figures for five round trips.

Referring to the table, it will be noted that locomotive No. 3751 handled four more cars at a slightly higher average speed than No. 3714. It handled, on an average, 33 per cent more tons per train and developed a proportionately greater number of ton-miles. In making comparisons of fuel consumption, consideration must be given to the fact that locomotive No. 3714 is not equipped with a feedwater heater and, accordingly, should be credited with about 10 per cent better performance. The balance of the improvement shown by locomotive No. 3751, however, is due to improvements in design, and amounts to a saving of roughly one-third of the fuel per unit of work which locomotive No. 3714 consumes under the most favorable circumstances. It will be noted that locomotive No. 3751 evaporated an average of 930 lb. of water and burned 138.6 lb. of coal per 1,000 ton-miles, or at the rate of 6.74 lb. of water per lb. of coal during these tests. All tests were made burning Colorado and New Mexico mine-run coal on round-hole table grates with 16-per-cent air openings.

Track Stress Limited

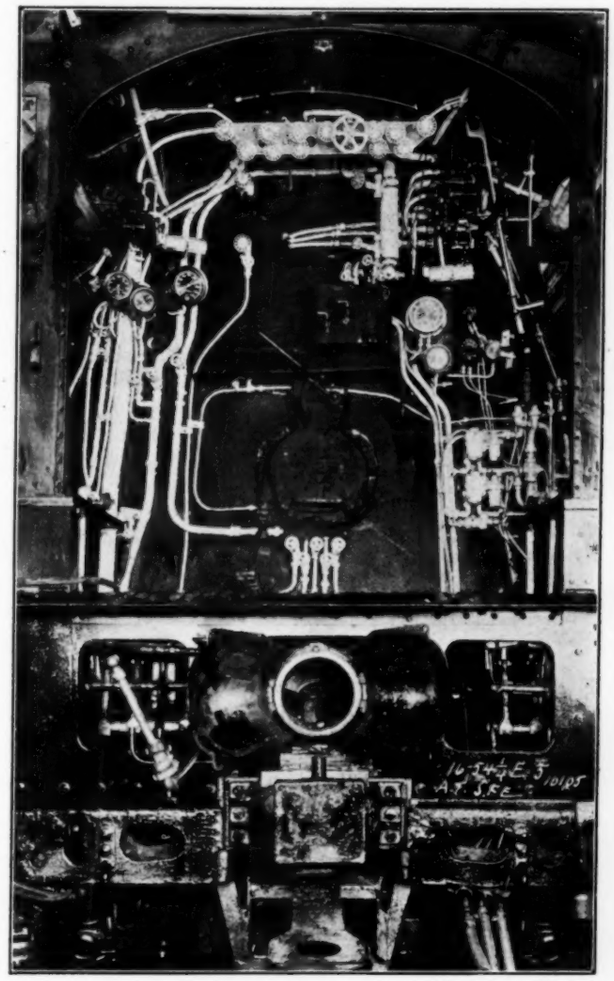
As a result of studies made on the Santa Fe during the past few years with a view to determining the wheel loading, distribution of weights and method of counterbalancing which will keep track stress within safe limits, a loading of trucks and driving axles of locomotive No. 3751 was adopted as shown in Table II. For purposes of comparison, the wheel loads of locomotive No. 3710, a previous Santa Fe Mountain type locomotive, are also given in this table.

Table II—Comparative Driving Axle and Truck Loads in Pounds

	Locomotive 3751	Locomotive 3710
Engine truck	63,500	58,100
No. 1 wheels	66,300	61,350
Main wheels	70,600	60,850
No. 3 wheels	66,500	60,550
No. 4 wheels	66,000	60,350
Trailer truck	92,600	66,500

All of the driving wheels on locomotive No. 3751 have flanged tires, and no driving box lateral motion device is provided. The tires on No. 1 and No. 4 wheels are set ⅛-in. nearer together than on the main and No. 3 wheels. Three-eighths inch lateral motion is provided on the front truck wheels, 3/16 in. on all drivers and on the forward trailer truck wheels, and ⅜-in. on the back wheels of the trailer truck. In general, the maximum static loads were kept to 70,000 lb. per axle and the combined static and dynamic loads to 76,000 lb. per axle. The effectiveness of this design, together with accurate cross counterbalancing and a division of the trailer-truck load between two axles, has been such as to permit increasing driving-axle loads almost 10,000 lb. in locomotive No. 3751 as compared with locomotive No. 3710 and at the same time to develop lower peak track stresses.

The comparative effects of these two locomotives on tangent track at 60 miles per hour are plainly shown in Chart I which gives the equivalent static load on each

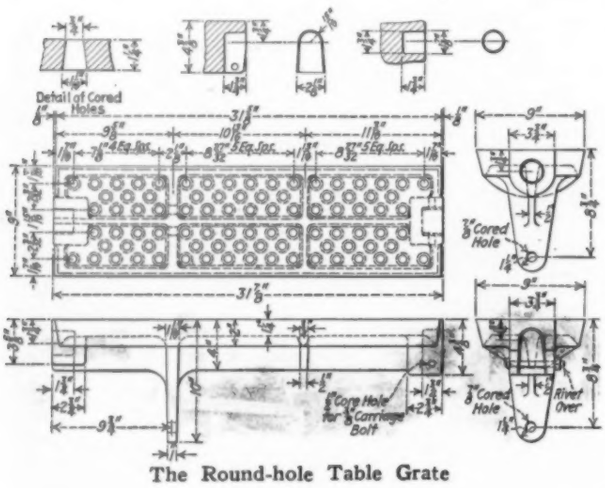


The Back Boiler Head

pair of drivers through a complete revolution. A glance at the chart shows that in locomotive No. 3751, the No. 1 driving wheels have been made to take more nearly a fair share of the equivalent static load than was the case with locomotive No. 3710, and as a result, the main and particularly the No. 3 wheels have been relieved of excessive loading. The chart shows that locomotive No. 3751 at 60 miles per hour on tangent track provides about 3,000 lb. less maximum equivalent static load on the rails than locomotive 3710, in spite of having from 9 to 15 per cent greater individual driving axle loads.

The stresses in both rails occasioned by locomotive 3751 passing a 10-deg. curve at three different speeds are shown in Chart II. In general, this chart indicates

that the loads are fairly well distributed between the driving wheels and trucks under all curve and speed conditions; at least excessive peak loads from any one pair of wheels are avoided. Similar charts to those reproduced here for locomotive No. 3751 were developed for locomotive No. 3710 and published in the 1926



The Round-hole Table Grate

proceedings of the American Railway Association, Mechanical Division. In fact, the results of the tests reported at that time served as the basis for the distribution of wheel loads in the present locomotive.

To illustrate how peak rail loads have been avoided by the design of locomotive No. 3751, a reference to the diagram for locomotive No. 3710, published in 1926, shows that at five miles an hour the No. 3 driving wheels cause a stress of about 46,000 lb. per sq. in. on the outside edge of the base of the inner rail on a 10-deg. curve. With locomotive No. 3751, this stress at the slightly greater speed of 10 miles an hour has been reduced to 32,000 lb. per sq. in., as indicated in Chart II. At 25 miles an hour on the same curve, the No. 3 wheels of locomotive No. 3710 cause a maximum rail stress of about 35,000 lb. per sq. in., whereas the No. 3 wheels on locomotive No. 3751 cause a stress of only 32,000 lb. per sq. in. The records show that the trailer wheels of locomotive No. 3710, in passing a 10-deg. curve at 25 or more miles an hour, introduce a stress in excess of 40,000 per sq. in. in the outside edge of the base of the outer rail. The trailer truck design on locomotive No. 3751, with the division of the load between two axles and a substantially shorter distance between the No. 4 driving and No. 1 trailer wheels, overcomes this difficulty.

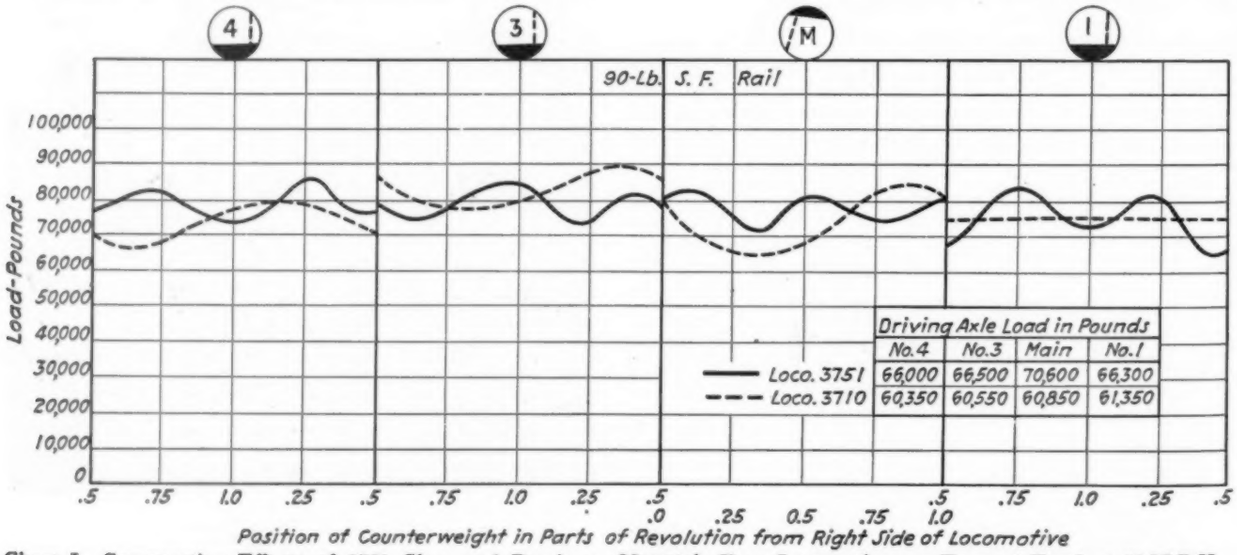


Chart I—Comparative Effects of 3751 Class and Previous Mountain Type Locomotives on Tangent Track at 60 M.P.H. —The Chart Shows Equivalent Static Load on Each Pair of Drivers Through a Complete Revolution

General Description

In conjunction with the desire for high capacity, fuel economy and reduced track stress, an effort has been made in the design of the Santa Fe 3751-class locomotives, to produce a type which requires less maintenance expense than some of its predecessors. Although no definite figures are available, this has undoubtedly been accomplished to a considerable degree, since locomotive design which reduces the destructive effect on track and roadway must necessarily involve the equalizing of unbalanced forces in the locomotive structure itself and consequently reduce wear and tear and resultant maintenance.

The 3751-class locomotive is equipped with one-piece cast steel cylinders and a separately cast Commonwealth bed frame. A Type E superheater with American multiple throttle is installed, also Nicholson thermic syphons in both the firebox and combustion chamber. The Elesco feedwater-heater installation includes a centrifugal pump designed to avoid pulsations which, under certain conditions, accentuate foaming difficulties. Other equipment on this locomotive includes the Ragonnet power reverse gear, Walschaert valve gear with multiplying lever to give nine inches maximum valve travel, Layden four-ported exhaust nozzle, 25½-in. diameter smokestack and insulated smokebox.

An auxiliary dome, just ahead of the main steam dome and slightly to the left of the boiler center line, carries the safety valves and affords entrance to the boiler without removing the dry pipe. Dual sand boxes and equipment, including Graham-White sanders, give ample capacity and reliability for long distance mountain runs. Locomotives Nos. 3752 to 3756 inclusive, have Dupont stokers and Franklin butterfly fire doors. Loco-

motives Nos. 3751 and 3757 to 3760 inclusive, have Duplex stokers and Franklin vertical fire doors.

Alloy steels are used to a limited extent in the construction of these locomotives. The main driving wheel centers are of high tensile strength steel. The hollow main crank pins, as well as the piston rods, are made of oil-quenched and tempered chrome-nickel steel. Main and side rods and crank pins, other than the main, are carbon steel, normalized. Steam-pipe and superheater bolts in the smokebox are made of chrome-nickel steel, heat treated. Phosphor-bronze driving box brasses and nickel-bronze floating rod bushings are used.

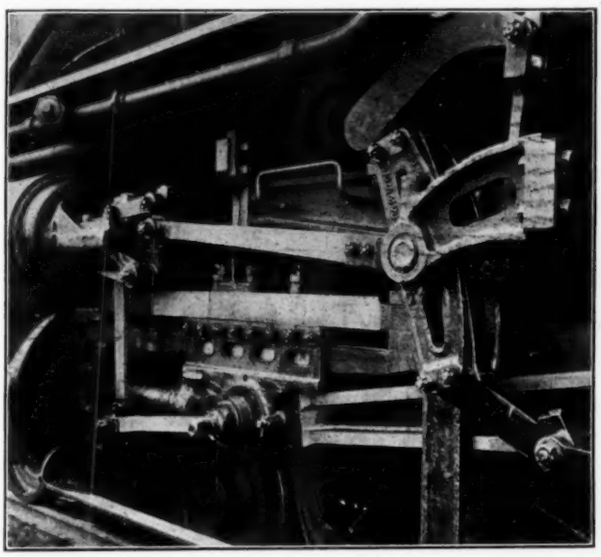
The locomotive tender is constructed with a Commonwealth one-piece cast steel underframe having end sills cast integral and designed to accommodate the Franklin unit drawbar arrangement. Six-wheel trucks are applied, with cast steel side frames having riveted liners on the pedestal wear faces. Tatum-Zell type journal boxes are used. The tender has a capacity for 15,000 gal. of water and 20 tons of coal. The general dimensions of the new locomotive, as compared with a previous mountain type locomotive, are given in Table III.

Cylinders and Running Gear

The cylinders of the 3751-class locomotive are combined in a one-piece steel casting representing a saving in weight of approximately 25 per cent over cylinders of cast iron. This steel cylinder casting is bolted and keyed to a locomotive bed and cradle frame cast of steel in one piece, with separate steel front deck casting in order to facilitate repairs in case of accidental collision. The steam and exhaust passages of the cylinders are designed free from restrictions and obstructions to the flow of steam. The exhaust passages are gradually reduced in area from the valve bushings to the base of the exhaust pipe in such a way that the cross section at no point is larger than a preceding section. All fillets have at least ¾ in. radius.

The front engine truck is of the constant-resistance type with Commonwealth cast-steel frame, 33-in. solid rolled steel wheels, and 6-in. by 11-in. journals. The trailer truck is of the four-wheel Delta type with constant-resistance rockers and has a one-piece cast-steel frame. Both pairs of trailer wheels are 40 in. in diameter, the journals being 9 in. by 14 in. Brass pedestal wearing liners are riveted to the truck frame.

The driving wheels are 73 in. in diameter, and in order to apply a boiler of the desired diameter and capacity, it was found necessary to use driving springs with reverse camber. The driving wheel centers are 66 in. in diameter and mounted on hollow-bored axles, the main axle being 13 in. in diameter and the others 12 in. The main crank pin also is hollow-bored with a four-inch hole to reduce weight and provide for delivery of grease under pressure to the center of the main and side rod floating bushings. Flange tires are provided on all driving wheels, spaced as follows: Front wheels, 53⅛ in.; main wheels, 53¼ in.; No. 3 wheels, 53¼ in.; No. 4 wheels, 53⅛ in. Revolving weights and 50 per cent of the reciprocating weights are counterbalanced, revolving weights in the main wheels being cross-counterbalanced. The static and dynamic load on these wheels is kept under 76,000 lb. per pair of wheels.



Walschaert Valve Gear Arranged for Long Travel

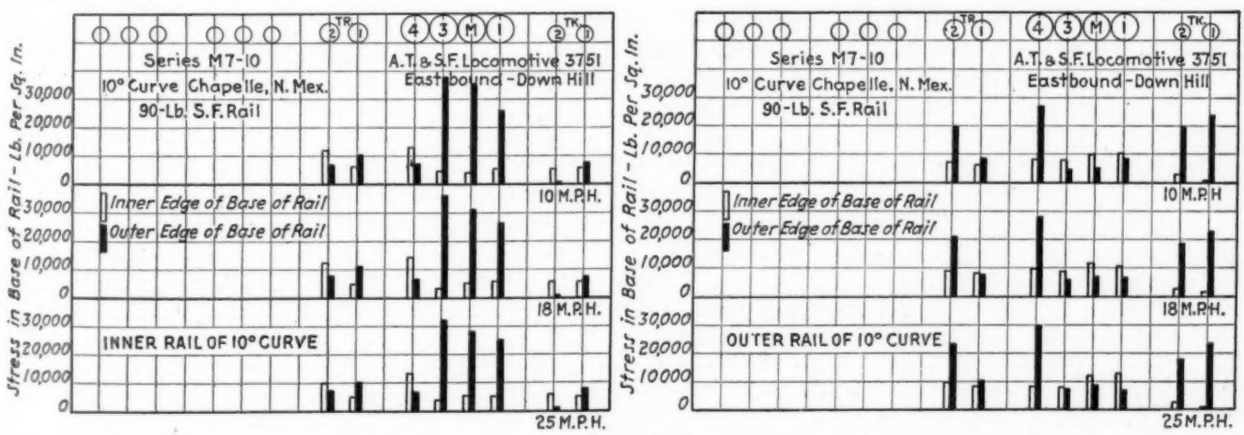
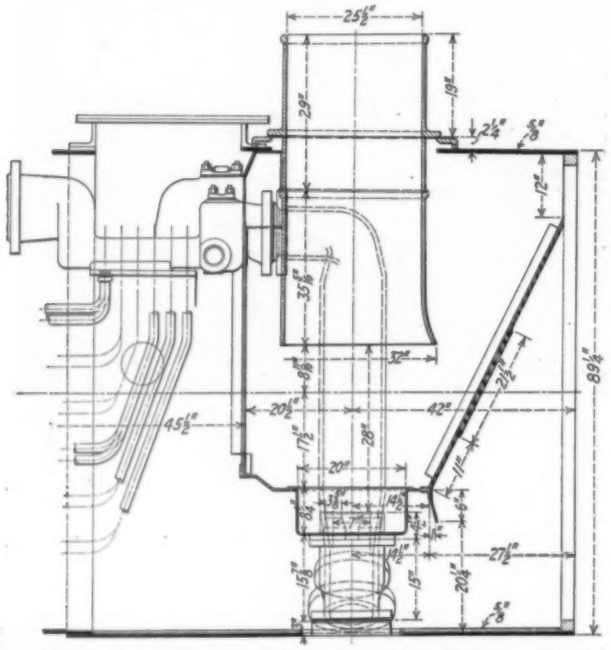


Chart II—Stress in Inner and Outer Rails of a 10-Deg. Curve Occasioned by the Passing of a 3751 Class Locomotive

The driving boxes have a bearing 13 in. long on the journals and are equipped with phosphor-bronze brasses with babbitt inserts and Elvin grease cellars. The shoes and wedges are also made of phosphor bronze. The normalized carbon-steel main rods have floating bushings on the back ends and front ends tapered to prevent galling in the reinforced Laird type crossheads. Grease cups are forged solid with the rod and off center to give a stronger construction. Pistons are of the Universal three-bull-ring type.

Walschaert valve gears are supplied with an additional lever interposed between the radius rod and combination lever and pivoted at the rear end of the back valve chamber head. This arrangement, covered by a patent application, magnifies the motion produced by the link but does not affect the motion produced by the combination lever and affords a longer valve travel than usual with the Walschaert gear without exceeding the normal limits of angularity. The maximum travel obtained is nine inches, and in order to take full advantage of this travel and permit finer adjustments of cut-off, the Ragonnet power reverse gear is operated from



Smokebox Arrangement, with the Layden Exhaust Nozzle

the cab by a reverse lever and quadrant cut with more than the usual number of teeth.

The boiler of the new locomotive is designed for a minimum factor of safety of four with a boiler pressure of 225 lb. It is of the wagon-top type, with conical barrel, the rear course of which is 99-15/16 in., and the first course 88 in. in outside diameter. The firebox has a grate area of 108 sq. ft. and is equipped with two 3½-in. arch tubes, and two Nicholson thermic syphons. The combustion chamber is equipped with one thermic syphon. There are 221 superheater flues, 3½ in. in diameter by 21 ft. long; and 59 tubes, 2¼ in. in diameter and of the same length. All of the superheater flues are electric welded to the back flue sheet and beaded in the front.

The wrapper sheet for this boiler is made in three pieces. The firebox and combustion chamber sides and crown sheet are also made in one piece and welded. The cast steel mud ring, double riveted throughout, is arranged with a pad 1 in. thick riveted to the underside of each corner and welded, inside and out, 12 in. each way from the corner. All firebox seams also are welded 50 in. up from the bottom of the sheets. Flannery flexible staybolts with universal sleeves are used in the braking zones and completely around the combustion chamber, these bolts being hollow and arranged for electric testing.

In addition to the main steam dome, pressed from a single piece of openhearth steel, an auxiliary dome is located ahead of the main dome and far enough to the left of the boiler centerline so that the 9½-in. inside dry pipe will not prevent entrance to the boiler for inspection or other purposes. The smokebox is of the extended type, 89¼ in. in outside diameter, with a pressed-steel front-end door and door ring hinged to the smokebox by an Okadee front-end hinge.

The front end arrangement consists of a Type E superheater header with American multiple throttle included, and steam pipes passing through the lower part of the smokebox to the steam chests. A Layden four-

Table III—Comparative Dimensions of Santa Fe 4-8-4 and 4-8-2 Type Locomotives

	3751 Class	3700 Class
Railroad	A. T. & S. F.	A. T. & S. F.
Type of locomotive	4-8-4	4-8-2
Service	Passenger	Passenger
Rated tractive force at 85 per cent cutoff	66,000 lb.	56,000 lb.
Cylinders, diameter and stroke	30 in. by 30 in.	28 in. by 28 in.
Valve gear, type	Walschaert	Walschaert
Valves, piston type, size	15 in.	15 in.
Maximum travel	9 in.	6¾ in.
Outside lap	1⅜ in.	1⅛ in.
Lead in full gear	¼	¼
Cut-off in full gear, per cent	85	85
Weights in working order:		
On drivers	269,400 lb.	243,100 lb.
On front truck	64,600 lb.	51,800 lb.
On trailing truck	87,900 lb.	66,500 lb.
Total engine	421,900 lb.	361,400 lb.
Tender	283,000 lb.	233,720 lb.
Wheel bases:		
Driving	19 ft.	18 ft.
Rigid	19 ft.	18 ft.
Total engine	44 ft.	39 ft. 5 in.
Total engine and tender	37 ft. 2⅛ in.	76 ft. 8⅝ in.
Wheels, diameter outside tires:		
Driving	73 in.	69 in.
Front truck	33 in.	33 in.
Trailing truck	40 in.	47 in.
Journals, diameter and length:		
Driving, main	13 in. by 13 in.	12 in. by 12 in.
Driving, others	12 in. by 13 in.	11 in. by 12 in.
Front truck	7½ in. by 13 in.	7 in. by 12 in.
Trailing truck	9 in. by 14 in.	9 in. by 14 in.
Boiler:		
Type	Wagon Top	Wagon Top
Steam pressure	210	210
Fuel	Bit. coal	Bit. coal
Diameter, first ring, inside	86⅜ in.	80½ in.
Firebox, length and width	144 in. by 108 in.	122¼ in. by 84¼ in.
Height, mud ring to crown sheet, back	79 in.	77¼ in.
Combustion chamber, length	44 in.	45½ in.
Tubes, number and diameter	57—2¼ in.	254—2¼ in.
Flues, number and diameter	220—3½ in.	43—5½ in.
Length over tube sheets	21 ft.	21 ft.
Tube spacing	3 in.	3 1/16 in.
Flue spacing	4¼ in.	6½ in.
Grate type	Round hole table	Round hole table
Grate area	108 sq. ft.	71.7 sq. ft.
Heating surfaces:		
Firebox and combustion chamber	395 sq. ft.	335 sq. ft.
Arch tubes and syphons	145 sq. ft.	38 sq. ft.
Flues	5,132 sq. ft.	4,419 sq. ft.
Total evaporative	5,672 sq. ft.	4,792 sq. ft.
Superheating	2,250 sq. ft.	1,087 sq. ft.
Comb. evaporative and superheating	7,922 sq. ft.	5,879 sq. ft.
Special equipment:		
Syphons	3	None
Superheater	Type E	Type A
Feedwater heater	Elesco	None
Stoker	Duplex and Dupont	Duplex
Booster	None	None
Tender:		
Style	Water Bottom	Water Bottom
Water capacity	15,000 gal.	12,000 gal.
Fuel capacity	20 tons	16 tons
Wheels, diameter outside tires	33 in.	33 in.
Journals, diameter and length	6 in. by 11 in.	5½ in. by 10 in.
Weight proportions:		
Wt. on drivers ÷ total wt. engine, per cent	.64	.67
Wt. on drivers ÷ tractive force	4.08	4.34
Total wt., engine ÷ comb. heat surface	53.2	61.4
Boiler proportions:		
Tractive force ÷ comb. heat. surface	8.33	9.53
Tractive force × dia. drivers ÷ comb. heat. surface	618	657
Firebox heat. surface ÷ grate area	3.66	4.67
Firebox heat. surface, per cent of evap. heat. surface	5.2	7.0
Superheat. surface, per cent of evap. heat. surface	3.9	2.3
Comb. heat. surface ÷ grate area	73.3	82.0

ported exhaust nozzle is provided, exhausting into a stack which extends 21¼ in. above the smokebox, and is choked to a diameter of 25½ in. The smokestack saddle is electric welded to the smokebox all around. The smokebox is insulated with one-inch magnesia block lagging, the jacket being pocketed around the superheater header bolts. The front end door and ring are also lagged on the inside and protected by a 3/16-in. plate. Lagging of the smokebox is done in accordance with standard Santa Fe practice, not only to conserve heat but also to save labor and expense in painting.

An Elesco feedwater heater is located on the front deck, and is fed by a centrifugal feedwater pump under the cab on the left side of the locomotive. Special Barco flexible ball joints are used at points where the feedwater pump discharge pipe enters and leaves the heater. It will be noticed the steel cab, which is lined with wood, is located entirely back of the back boiler head, thus giving ready access to washout plugs and flexible staybolt caps simply by removing sections of the jacket and lagging. The cab is anchored by bolts to five brackets on the back boilerhead, also by being bolted to the running boards through suitable angle irons. In general, piping in the cab is arranged neatly and the equipment located so as not to interfere with a ready view of gages, water glasses, lubricators, etc. The cab is steam heated, with a false floor above a radiator on either side. Small hinged doors, one on each side, provide ventilation when necessary.

The combined main and injector steam fountain, located on top of the boiler just ahead of the cab, is carefully lagged and jacketed and has extension rods from all valves passing through the front cab wall and terminating within easy reach of a man standing on the firing deck. A Chicago non-lifting injector is on the fireman's side. A Chicago five-feed five-pint lubricator for cylinder and air compressor lubrication is provided; also a transfer filler as illustrated on the back boiler head. An Ashcroft steam chest and back pressure gage is carried on the same bracket with the air gages in order to be easily read by the engineman. The water column and water glass drain valves have Nicalloy discs and seats. Crane three-inch safety valves are applied in the auxiliary steam dome cover.

Roundhole table grates are used in this locomotive, the air openings totaling 16 per cent of the total area of 108 sq. ft. The grates have tapered holes, ¾ in. in diameter at the top, and set with ½-in. openings between the rocking grates and the grate bars. The top line of the grates is carried 4¾ in. above the bottom of the mud ring. These grates are hand-operated by means of six shaker levers. The ash pan is of the Commonwealth cast steel type with hinged doors for cleaning, and plates to prevent dropping fire around the grate rods at the back end of the pan. One hopper of this ash pan is placed ahead of the front trailer axle and two hoppers are located between the axles.

The locomotive is equipped with two oval sand boxes located ahead of the steam dome and having duplicate Graham-White sanders and piping. Sand from the front box is applied to the rails ahead of the front and back of the main drivers. Sand from the back box is applied to the rails ahead of the main and back of the rear drivers. A single Duplex operating valve, located in the cab, controls the application of the sand.

The electrical equipment on this locomotive consists of a Pyle-National Type E-3 steam turbine headlight generator with a 14-in. Golden Glow silver-back glass reflector and screw type door fastening.

Alba B. Johnson Honored

ALBA Boardman Johnson, president of the Railway Business Association, was the guest of honor at a dinner given in the Waldorf Apartments of the Waldorf-Astoria, New York, Thursday evening, May 24, 1928. The guests included present as well as former officers and members of the executive committee of the Railway Business Association, who have been associated with Mr. Johnson in that work practically throughout the life of the organization, and a few of Mr. Johnson's most intimate friends. The event memorialized the tenth anniversary of Mr. Johnson's election as president of the Railway Business Association and his seventieth birthday. He was presented with a beautifully bound volume of longhand letters from those who were at the dinner, as well as from those who had been invited, but were unable to attend. A large table of unusual width was arranged in the form of an oval, the inner side being used for the operation of a miniature railway, including freight and passenger trains, and the necessary stations, yards, structures, signals, etc. W. E. Sharp, president of the Grip Nut Company, acted as toastmaster. H. H. Westinghouse, chairman of the Westinghouse Air Brake Company, one of the organizers of the Railway Business Association, spoke on behalf of the "old guard" in expressing appreciation and good wishes to Mr. Johnson. William E. Clow, president of James B. Clow & Sons, Chicago, expressed the well wishes of the western group. R. H. Aishton, president of the American Railway Association, responded for the railway officers, and Samuel O. Dunn, editor of the *Railway Age*, for the press. James E. Emery, general counsel of the National Association of Manufacturers, spoke on behalf of that organization, and Frank W. Noxon, secretary of the Railway Business Association, for the employed staff of the R. B. A., E. B. Leigh, president of the Chicago Railway Equipment Company, made the presentation.

The speaking program was preceded by stereopticon and moving pictures tracing Mr. Johnson's career and illustrating his many activities, particularly of recent years. While the nature of the occasion was obviously a great surprise to Mr. Johnson, he responded with an address which made a most profound impression and which dealt largely with an expression of his philosophy of life.

* * *

"Blue Banner Limited" on the Wabash at Englewood, Ill.

Hearing on Trucking in New York

New Haven favors constructive station—Other roads oppose it but some would retain trucks for other service

PROTRACTED cross-examination of railway witnesses by representatives of the several participants to the Interstate Commerce Commission investigation into freight trucking on Manhattan Island has consumed the greater part of the sessions since the opening of the case in New York on May 22 before Commissioner Claude R. Porter and Attorney-Examiner Harry C. Ames (See *Railway Age,* Motor Transport Section, May 26, page 1259.)

As the case progresses the differing attitudes of the respondent carriers is being developed through the testimony of their respective witnesses.

The Pennsylvania, the Lehigh Valley and the Erie, on the other hand, favor the discontinuance of the constructive station operation, i.e., direct cartage of freight from rail terminal to consignee, the truckman acting as the railroad's agent up to the constructive station and as consignee's agent for the rest of the haul. Outbound shipments likewise may be handled in this manner. These three roads favor the retention of inland stations and trucking in lieu of lighterage. The Central Railroad of New Jersey and Delaware, Lackawanna and Western operate no inland stations but join with the other roads entering the New Jersey side in the effort to cancel constructive station tariffs.

The New York, New Haven & Hartford, which operates no inland stations and does no trucking in lieu of lighterage, favors a continuation of constructive station practices in the hope that it will develop into an economical substitute for pier handling and that the railroad may release piers for which high rentals must be paid.

New Haven May Do Its Own Trucking

In his testimony on cross-examination regarding this latter point, Vice-President C. E. Smith of the New Haven held it to be the obligation of a carrier to provide economical substitutes whenever such are practical. He proceeded to state that the New Haven may have to organize its own trucking subsidiary and truck to and from store doors if experience proves that the services of trucking companies are not adequate to the needs of the parties concerned. Further, this witness testified that the granting of rebates or other manipulations or discriminations by truckers might conceivably force this carrier to put its own trucks into service.

Counsel for the Port of New York Authority, which opposes the discontinuance of the truck handling of freight, are cross-examining each railway witness at length. Much of this examination is an effort to place in the record the attitude of each succeeding witness on the Port Authority's proposal that inland stations be established on Manhattan Island for the use of all railroads. Other participants include the Merchants Association of New York, representatives of trucking, warehouse and independent terminal interests, together with counsel representing shippers and consignees. The hearing has proceeded to the point where the Erie, Lehigh Valley, Delaware Lackawanna & Western, and Baltimore & Ohio witnesses are returning for direct testimony and cross-examination on the detail of truck operation. These roads submitted only historical testimony at the outset while the New Haven, Pennsylvania and Jersey Central elected to offer all direct testimony at one sitting of their respective witnesses.

New Haven Favors the Constructive Station

In support of its contention that the experiment in constructive station practices, as a substitute for marine and pier operations, is worthy of a longer trial, the New York, New Haven & Hartford, toward the close of the first day introduced the testimony of H. E. Bailey, New York division superintendent, J. H. Lofland, marine superintendent, and Vice-President Smith. Mr. Bailey read a prepared statement which outlined the terminal operations of the New Haven in the Metropolitan area. From this statement it developed that the New Haven has established its constructive station at Fifty-ninth street and has awarded trucking contracts to some 15 concerns who make the haul from Harlem river yard to the constructive station for 6 cents per 100 lb. He added in response to questions in cross-examination that the New Haven has found the constructive station plan adequate and has not nor does it intend to seek a suspension of the tariff to the practice.

The witness further testified that his company has experienced no trouble as a result of its employment of many truckers to make the haul to the constructive station. With reference to business north of the constructive station, consignees accept delivery at Harlem river yard with no allowance. On freight destined or originating south of the Fifty-ninth street constructive station the consignee or shipper has the option of accepting this service or that of the piers as he formerly did.

Mr. Lofland also read a prepared statement relating to marine operations of the New Haven about Manhattan Island and offered testimony as to the New Haven's experience with trucking in lieu of lighterage. On this latter point the witness stated that the practice was abandoned when it was found to be uneconomical in view of the small volume which lent itself readily to that method of transfer; hence no saving in the floating costs were effected despite the addition of the trucking charges. Since October, 1927, this road has done no trucking in lieu of lighterage.

Following the plan of his colleagues, Vice-President Smith next opened his testimony with a prepared statement which outlined the history of the New Haven operations on and about Manhattan Island. This statement included the declaration that the road had at times considered the extension of its tracks down the East side of Manhattan, but on each occasion it was concluded that the floating operations were more economical than that. To this the witness added that trucking may be cheaper still, and had automobiles been in use at the time, pier services might never have been inaugurated. Further, he stated that several factors such as congestion, lease regulations and agitation for the conversion of the water front to other uses indicated the desirability of developing a suitable substitute for the pier activities.

Major Smith concluded his direct testimony with the statement that the trucking was inaugurated solely in the interest of economy, since it is the hope of

the New Haven ultimately to "dry up the piers" if a suitable substitute is developed.

The cross-examination of Major Smith, opened by Wilber LaRoe, Jr., of counsel for the Port of New York Authority, was extensive and continued through the greater part of the forenoon session on the second hearing day. At the outset the witness agreed that an increasing co-ordination of rails and trucks is desirable, but added that the New Haven had retained adequate pier capacity for a return to its former practice, if forced to resort to it.

At this point the witness expressed his opinion that the experiment in trucking through constructive stations deserved a longer trial. He pointed out that some saving over the cost of pier operations is now noted but the ultimate economy will come only when so much freight moves by truck that the pier stations can be abandoned.

Here W. H. Chandler, traffic manager of the Merchants' Association brought out, through the witness, that truckmen are under orders to solicit all possible constructive station business. Major Smith predicted the inauguration of store-door delivery when the shippers and consignees become disposed to absorb a fair portion of its cost. In response to questioners witness testified that there was no evidence in his office records that competition had prompted the New Haven to inaugurate the constructive station plan. He was of the opinion that much of the economy is to come from a consolidation of the trucking service and thus it would not be feasible to permit patrons to do their own hauling. Contracts with the New Haven, however, contain a cancellation clause to be invoked against any trucker who cuts rates to the patron below a specified minimum of 4 cents per 100 lb. on newsprint paper and 5 cents per 100 lb. on all other freight. This is the rate which must be charged for movement beyond the constructive station and is in addition to the railroad's payment.

Questioned as to the desirability of universal stations for Manhattan, the witness saw no objection on the ground that harmony could not be maintained among participating carriers but thought that the carriers had not seen any economy in the proposed unification of terminals. The witness declared that his experience with universal station operation in St. Louis convinced him that the claim of the Port Authority that $14,000,000 would be saved annually by the use of such a facility on Manhattan was greatly overdrawn, continuing to observe that any figures will depend on the mind of the one making the investigation. After obtaining the admission that the New Haven is at present unwilling to co-operate in the movement for a universal station, Julius H. Cohen, of counsel for the Port Authority, suspended his questioning and the examination was continued by his colleague, Mr. LaRoe. This questioner developed that Major Smith has no objection to universal stations aside from his conviction that they offer no economies.

Port Authority Not Sufficiently Concerned Over Savings to Railroads

In the midst of further questioning by Mr. Cohen, the witness observed that in his opinion the Port Authority did not propose that the carriers should get a fair share of the $14,000,000 which was estimated as the saving to result from a universal station plan. According to the witness the carriers were assigned but $2,000,000 of these hypothetical savings whereas the shippers and consignees were assigned the remaining $12,000,000—or 85 per cent of the total. He intimated that co-operation might possibly be forthcoming if a more equitable allocation of possible savings were proposed.

At this point C. Brown, general solicitor of the New York Central, injected a few questions regarding newsprint paper traffic which the New Haven was handling through its constructive stations, but failed to obtain an admission from the witness that competition for this traffic was a factor in the New Haven's desire to continue trucking through a constructive station. P. McCollester, representing the Newspaper Publishers Association, then brought out that the New Haven prefers to truck this paper traffic because such handling is more economical than pier operations. This concluded the testimony of Major Smith.

Baltimore & Ohio's Practice

General-Attorney C. R. Webber of the Baltimore & Ohio then called W. F. Richardson, freight traffic manager, Northeastern region, who testified to considerations which led this company to establish constructive stations on March 1, 1927. This road has no inland stations but does trucking in lieu of lighterage. In response to cross-examination the witness stated that no complaints against the operation of the constructive station trucking on the part of shippers had reached him and that the Baltimore & Ohio did not initiate the cancellation of the constructive station schedules. This road deferred testimony on other aspects of the case.

P. R. R. Wishes to Retain Inland Stations and Lighterage Trucking

H. W. Bikle, general attorney of the Pennsylvania, outlined the position of that company as one favoring the discontinuance of the constructive station tariffs with a retention of the inland stations and trucking in lieu of lighterage.

J. W. Roberts, general superintendent of transportation, Eastern region, was called as the first Pennsylvania witness. He opened his testimony with an outline of Pennsylvania terminal operations about Manhattan. The road operates two inland stations, one at Laight and West streets for inbound traffic and the other at Watts and Washington streets for outbound freight. Constructive stations service is also provided. Movement of freight to and from the construction and inland stations is performed by the United States Trucking Corporation under exclusive contract which was awarded after competitive bidding. Trucking in lieu of lighterage is done by the Motor Haulage Company.

The witness, supporting his testimony with exhibits made after studies of the situation, declared it to be the conclusion of his company that insufficient use was made of the constructive stations to justify their continuance. Hence the Pennsylvania favored discontinuance and proposed to divert freight now handled under the constructive station plan to its established inland stations. Studies indicated that but 27,345 tons had passed through the constructive stations since their inauguration eleven months prior to the studies. A total of 288 patrons used the service, but the regular users were comparatively few of this total. Since it was hoped that most of the carload freight would be diverted through these constructive stations, the results are found unsatisfactory inasmuch as but 30 per cent of the total eastbound carload freight handled through constructive and inland stations passes through the former.

Danger of Discrimination by Contract Truckmen

Inland stations on the other hand, according to Mr. Roberts, have been highly satisfactory to the railroad and, he thinks, to the patrons. In addition to the failure of the shippers to use the constructive station service the

witness revealed that a fear lest discrimination in charges by the truckers would lead to store-door delivery without adequate compensation to the carrier influenced the Pennsylvania in its opposition to a continuance of the practice.

The cross-examination was opened by Mr. McCollester, representing the newspaper publishers, who questioned the witness on the ability of the carriers to supervise the truckmen in a satisfactory manner. The witness did not think effective supervision possible and referred to persistent rumors of manipulated charges. He held the situation to be different in the practice of trucking in lieu of lighterage in view of the fact that the truckman was the agent of the carrier throughout the movement. He admitted that the payment of 11 cents per 100 lb. for trucking carload freight to the inland stations as against a 7 cent rate for trucking to the constructive station point undoubtedly deterred the trucking concern in the solicitation of constructive station business and thus perhaps accounted in some measure for the small tonnage moving under the latter tariffs.

The questioning next turned to the operations at the piers with special reference to the functions and status of loaders who are located at these stations and are not railway employees but are engaged as needed by the shipper or consignee.

As to the proposed universal station, Mr. Roberts stated his personal opinion to be that railway executives were right in their conclusion that it was undesirable, since he believed that a facility adequate to handle the volume without great congestion could not be designed. While admitting that the Pennsylvania abandoned a St. Louis station because the tonnage tended to become diverted to the universal station there, the witness nevertheless held that conditions in that city to be radically different from those obtaining in New York.

Mr. Chandler of the Merchant's Association here injected the evidence of a Pittsburgh shipper whose representative testified that the inauguration of constructive stations had enabled the concern to effect large economies in distribution. With the completion of this testimony the hearing was adjourned for the day.

With the opening of the morning session of the third day (May 24), cross-examination of Mr. Roberts of the Pennsylvania was resumed by a series of questions from Traffic Manager Chandler of the Merchant's Association. The questioner first turned to that portion of Mr. Roberts' direct testimony which concerned itself with the greater delay on the Jersey side in the case of freight passing through the constructive stations which delay was one of the reasons enumerated by the Pennsylvania for desiring a cancellation of the constructive station tariffs. The witness stated it to be his opinion that this delay occurred because consignees do not issue prompt delivery instructions to the truckmen who must, in cases of constructive station delivery, consult receivers as to when and where delivery is required.

Constructive Service at Inland Station Rate Unfair to Railroad

Asked if his company had been informed of cases where constructive service was given by truckmen on freight which should have passed through the inland station, Mr. Roberts frankly stated that a recent complaint of that nature was under investigation but the facts were not developed. He further agreed with his cross-examiner that the truckman who gives constructive station service on freight billed to inland stations is in effect cheating the Pennsylvania out of 4 cents per 100 lb. since there is that difference in the rates paid by the road for the two types of trucking service. The 11 cent rate on trucking to the inland station is designed to compensate the trucking concern for the station operation and the unloading service. On this point the witness gave assurance that periodic checks had failed to indicate that such evasions were in practice.

J. W. Roberts on Store-Door Delivery

Mr. Roberts was next confronted with a report which he made in 1925 after a study of English railway practices in the collection and delivery of freight and opinions therein expressed were contrasted, by the questioner, with current testimony of the witness on store-door delivery in New York. The witness stated that he still agrees that railway participation in such services is a progressive step where it is required and that the plan deserves experiment if a study should reveal that mutual advantages would result. He went further and said that he would advocate it at any point where conditions would justify economy to the carriers and advantages to their patrons but added that the disappointments following the constructive station experiment, which is an approach to store-door delivery, indicated that the plan is not desirable for New York. A closing statement of Mr. Roberts on this point was to the effect that conditions in Great Britain are radically different since collection and delivery there have evolved in more that half a century to become considered as integral parts of railway operations. The case was said to be the reverse in United States, where it has always been assumed that the patron would perform such services for himself.

A representative of the Motor Haulage Company which does Pennsylvania trucking in lieu of lighterage arose to ask Mr. Roberts if any reference to that concern were intended in testimony concerning persistent rumors of manipulated charges by truckers for hauling past the constructive station line. The witness assured this questioner that intensive supervision had established that the services of the Motor Haulage Company were most satisfactory.

Remaining Cross-examination

Remaining cross-examination of Mr. Roberts, with the exception of final questions from Examiner Ames, was confined mainly to brief and intermittant questioning by representatives of truckmen, warehouses, contract terminals and other interests who are among the many participants in the proceeding. It was drawn from the witness that he would favor a railroad-operated inland station if such should become practicable while he admitted that the warehouses located over the existing inland stations enjoy advantages of location in the competition with other warehouses. It was not the opinion of Mr. Roberts that a substantial diminution of lighterage is likely when questioned regarding testimony of New Haven witnesses that it was the hope of their company to find a suitable substitute for marine operations.

One or Many Contract Truckmen?

On the question of employing several trucking concerns to haul the freight the witness stated that lack of experience with such a scheme leaves his mind open as to whether the introduction of competition would bring about more efficient trucking service. As to the extent to which the contract trucking concern of the road is employed by patrons for hauling to and from the inland station, Mr. Roberts was confirmed by a representative of the United States Trucking Corporation, in his expressed opinion that this concern received not more

than 20 per cent of such business. He would not advocate any large number of truckers since he feels that limitation to one gives more economical service.

After more questioning by Mr. Cohen of the Port Authority on his English report, previously used in Mr. Chandler's cross-examination of the witness, Examiner Ames opened his questioning. The examiner first compared the movement of freight through a constructive station with a similar shipment destined to an inland station, to bring out the differing services of the truckman in each case and thus the basis of the higher allowance for the haul to the inland station. The examiner then outlined a plan whereby both constructive service and inland station service could be given by the passage of freight through the inland station but without an unloading thereat in the case of tonnage billed under constructive tariffs. He then asked if this would not permit the placement of a checker at the inland station to see that the differing billings were handled without irregularity whereas such a check is not now feasible in view of the separation of the two station points. The witness agreed that this would result in advantages of supervision. He was then questioned as to the determination of the rate paid truckmen and stated that he would have no objection to entering a cost study on the matter with Interstate Commerce Commission staff.

The Status of Loaders

Examiner Ames turned his attention to the status of loaders at the pier stations and drew from the witness that the railroad regarded these as a necessary evil. Mr. Roberts would be glad to see the practice discontinued at any time but thought that an attempt to oust these loaders who are affiliated with a strong union would virtually tie up New York Harbor. He admitted, however, to Mr. Chandler, that the United Fruit Company had been able to dispense with services of the loaders.

C. N. J. Against Trucking in Any Form

With the Pennsylvania's resentation concluded, A. H. Elder, general solicitor, Central of New Jersey, called A. Hamilton, vice-president in charge of freight traffic, who, with the aid of maps and other exhibits, described the Jersey Central's New York facilities for the delivery and receipt of freight, pointing out that pier facilities are more than adequate to care for the volume. This company entered the constructive station plan on June 15, 1927, following the entrance of the Pennsylvania. Mr. Hamilton declared his road's sole motive for this step to be the meeting of competition, since it was felt that the Jersey Central could no longer refrain from offering a service provided by most other carriers. Despite this feeling of compulsion to meet the competition the witness stated that his company has never sought to justify the practice but on the contrary has been opposed to it.

He further stated that this road operates no inland stations and that nine trucking concerns are employed in the constructive station and trucking in lieu of lighterage services. These are paid seven cents per 100 lb. out of which the road is paid a ferry charge, estimated to be about one cent per 100 lb.

Mr. Hamilton testified that, in view of its short haul, the Jersey Central is paying a larger portion of its total revenue per ton for the trucking service than are most other carriers and hence it was considered a loss to have business diverted to the constructive stations from pier stations which must still be kept in operation and which are adequate to handle all the road's business. The added trucking charge is not offset by any noticeable saving resulting from the absence of such freight from the piers. The witness estimated the loss by such diversion to be approximately 90 cents per ton.

Mr. Hamilton next confirmed previous testimony of Mr. Roberts of the Pennsylvania, agreeing that cars were delayed longer on the New Jersey side when their lading was billed to a constructive station and also stating that, like the Pennsylvania, the Jersey Central had found but few patrons availing themselves of the service. After a few questions in cross-examination of Mr. Hamilton hearing was adjourned to Monday, May 28.

Suggest Railroads' Payment to Truckmen Is Too High

As the second week of the hearing opened on May 28, the cross-examination of Mr. Hamilton was resumed with questioning by Earl B. Barnes, representing the Merchants Truckmen's Bureau of New York. At the outset, Mr. Barnes assured the witness that he was entirely in sympathy with the desire of the Jersey Central to abolish the constructive stations and proceeded with a series of questions regarding rates paid to contract truckmen, and the contracts which this road has with such truckmen.

Mr. Barnes in questioning the witness injected the opinion that practical truckmen figure a differential of but three cents per 100 lb. on a haul from the Jersey side as against a haul from a Manhattan pier and thus inferred the Jersey Central was paying four cents too much under its seven cent rate. Mr. Hamilton was unwilling to express an opinion on the point without careful figuring.

Following the brief cross-examination by Mr. Chandler of the Merchants Association on the demurrage regulations with respect to constructive station freight and questioning by representatives of warehouse, trucking and newsprint interests, Mr. LaRoe of counsel for the Port Authority proceeded with his inquiry.

This questioner developed the fact that the Jersey Central pays an annual rental of approximately $148,000 for its Manhattan piers and with this as a base sought to build up a cost figure for handling freight over the piers for comparison with the cost of constructive station handling. Mr. Hamilton was unable to give the desired cost figures, whereupon the Port Authority asked that they be furnished for the record. Examiner Ames reserved decision on the motion, stating that it is not yet known what turn the case may take to make the cost of these services desirable information for the commission.

Presence of Loaders on Piers Again Questioned

Mr. LaRoe next turned his attention to the loaders at the piers but Mr. Hamilton was unable to give the sufficient reason for the existence of these functionaries, stating that so far as his knowledge went he could only say that "they are there."

Further questioning of the witness turned to constructive station deliveries on freight which should have been unloaded at a lighterage point in conformity with the tariff providing for trucking in lieu of lighterage. In response to Examiner Ames on this point, Mr. Hamilton conceded that freight, if handled in this manner, is in effect being delivered in no way different from freight passing through a constructive station. The examiner concluded his questioning after an inquiry into the three cent allowance per 100 lb. which the Jersey Central makes to receivers of a very few commodities who do their own trucking from the New Jersey shore.

Erie Hopes to Divert Constructive Station Business to Its Piers

Upon conclusion of Mr. Hamilton's testimony the Erie returned to supplement its opening testimony and J. M. Condon, general manager of the New York district, again took the stand. He first described the Erie pier facilities, pointing to enlargements of piers 20 and 21 and held that the road would have no difficulty in handling the freight now passing through the constructive stations.

The witness was questioned at length by counsel for the Port Authority on the extent to which piers 20 and 21 were devoted exclusively to the handling of fruit. Fruit was said to constitute about 85 per cent at times. The witness held, however, that other traffic was always handled at these points. His answers to questions on the status of loaders were similar to those of the preceding witnesses.

Mr. Condon next admitted that, on the whole, constructive stations were satisfactory to the patrons using them and that he has found no irregularities in the practices of Erie contract truckmen in handling it. He added that the fear that truckmen might manipulate charges was not an important factor in the Erie decision to seek a discontinuance of constructive station operation.

In response to Mr. Chandler of the Merchants Association the witness recalled no request from New York merchants that the loaders be removed from the Erie piers. He thought, however, that their elimination would precipitate a sympathetic strike, although he knew of no connection between these loaders and the longshoremen. After further questioning by Mr. Cohen of the Port Authority on the proposed universal station, the inquiry was taken up by Examiner Ames. He questioned the witness on the nature of the premises on Greenwich street wherein both the Erie and the Lehigh Valley operate inland stations. Mr. Condon was then excused as adjournment was taken for the day.

L. V. Safeguard Lighterage by Truck

Upon the opening of the May 29 sessions A. C. McIntyre, general freight agent of the Lehigh Valley, was recalled and remained on the witness stand throughout the greater part of the day. He testified that the Lehigh operates both constructive and inland stations as well as doing trucking in lieu of lighterage. It seeks to abolish the constructive station practices and retain the other trucking activities. In connection with its trucking in lieu of lighterage, Mr. McIntyre pointed out that his company does not substitute the truck for the lighter delivery in the case of freight which is billed to a destination off the waterfront or outside the free lighterage limits. In other words, he held, there is no opportunity to by-pass the lighterage point and give, in effect, constructive delivery. He added that unless such a rule is in force the practice of trucking in lieu of lighterage has the effect of establishing a series of constructive stations around Manhattan Island.

The witness stated that the Lehigh had ample pier capacity to handle the tonnage now passing through its constructive stations and it proposes to return it there rather than to the inland stations.

One Danger in Store-Door Delivery

When asked in cross-examination why he would oppose store-door delivery if rates were stipulated in the tariff, thus assuring that the consignee would pay for the service, the witness replied that the length of time required to secure adjustment in tariffs, in the event of increased trucking rates, might force the carriers to render the service for a considerable period at less than cost. As a parallel case he cited the delay which attended a former attempt to adjust rates for extra towing in New York harbor after the rates charged to the roads by the towing contractors had been increased.

Mr. LaRoe of counsel for the Port of New York Authority next took up the questioning and inquired into detailed costs of marine operations. The witness agreed to supply certain figures in which the Port Authority was interested. Mr. Cohen, representing the same body, then questioned the witness and sought the latter's attitude on a universal station for Manhattan. The witness, while agreeing that the plan might be worked out, persisted in his declaration that he considered it more desirable for the Lehigh to have its own station. With reference to the loaders at the piers, Mr. McIntyre stated agents of his railroad will see that patrons are permitted to handle their own freight.

Questioned next regarding the inland stations, the witness stated that their volume of traffic, like that of the constructive stations, had not come up to expectations, but it is nevertheless the purpose to retain these facilities inasmuch as better control over them is possible. In other words, the witness added, it was proposed to abolish the practice over which the carrier had least control. The Lehigh trucking contract requires an actual flooring of the freight at the inland station.

Examiner Warns Cross-Examiners

In the midst of a series of intermittent questions from various participating interests, Examiner Ames stated that he wanted to be fair to all but he nevertheless felt that the privilege of open hearing was being abused. The trouble, he added, was that everyone indulges in his own pet theories at the expenses of the witness' time.

At the opening of the afternoon session, Mr. McIntyre was examined first by Mr. Chandler of the Merchants Association, after which his testimony closed with questions from Examiner Ames. Mr. Chandler sought to determine what consideration was given the opinion of shippers when the suspension of constructive station tariffs was announced. Examiner Ames questioned the witness on the possibility of setting up a scheme of supervised constructive delivery in conjunction with the inland station. This was the same proposal which the examiner outlined for Mr. Roberts of the Pennsylvania. Mr. McIntyre agreed that such a scheme would be better than the present separation of the constructive and inland stations.

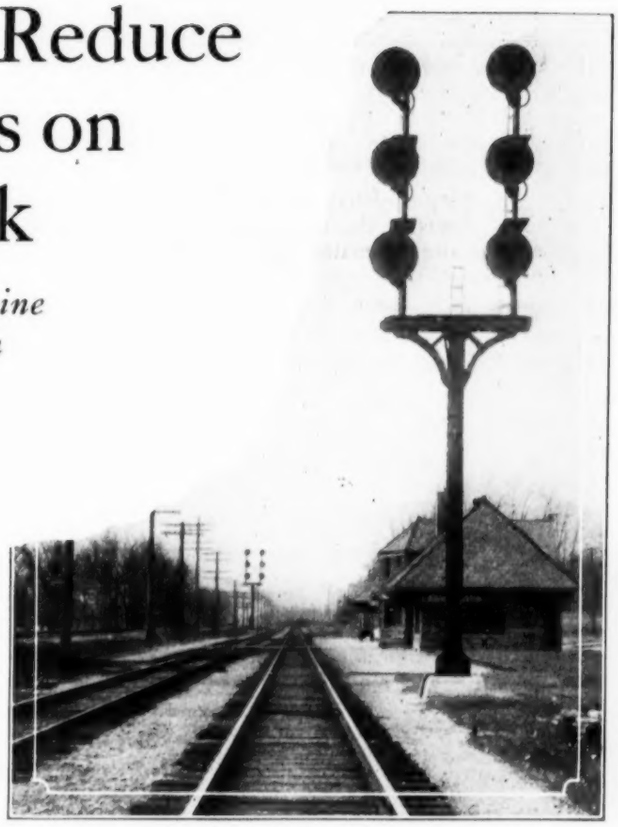
D. L. & W. Witness

C. F. McTague, assistant freight traffic manager of the Delaware, Lackawanna & Western, followed Mr. McIntyre on the witness stand. He followed the plan of preceding witnesses in opening with a description of Lackawanna facilities on and about Manhattan. This road operates no inland stations and seeks to abolish the constructive station practice. The reason given was that the scheme had not worked out as satisfactorily as was anticipated. In cross-examination the witness insisted that no evidence of manipulated charges by the truckmen had come to light.

Several questions were asked Mr. McTague by representatives of the Port Authority and terminal and warehouse interests. These were along the lines pursued by the counsel with preceding witnesses. In addition a representative of the Motor Haulage Company conducted a brief cross-examination. The hearing was to continue during the remainder of the week.

Automatic Signals Reduce Operating Costs on Double Track

Big Four eliminates five of nine manual block stations with crossover interlockings on 60-mile double track section



New Color-Light Manual Block Signals for Eastbound at Fern Bank

A monthly saving of $931.65 has been made in operators' wages by the elimination of five of the nine manual block stations on the 60-mile double-track line of the Cleveland, Cincinnati, Chicago & St. Louis between Cincinnati, Ohio, and Greensburg, Ind. On this section as well as on 365 miles of double track on other parts of the Big Four, it has been the regular practice for years to permit the operation of trains against the normal direction of traffic* and thereby run faster trains around slower ones, with the result that most trains can be kept moving rather than waiting on sidings for other trains to pass. Train movements are directed by manual block signals and train orders, the blocks extending from tower to tower. Run-around movements are facilitated by crossovers operated from interlocking plants.

For example, on the 60-mile section from Riverside, (Cincinnati) Ohio, to Greensburg, there were nine manual block stations. The traffic on this line includes 22 passenger trains and about 44 freight trains (both directions) daily or a total of 66 train movements per day. On leaving Cincinnati, the line follows the north bank of the Ohio river for 21 miles to Lawrenceburg Junction where it leaves the Ohio valley and ascends on a grade of one per cent for 19 miles to Brow, Ind. The remaining 20 miles to Greensburg is in open rolling territory.

Reduce Manual Signals

The reduction of the number of manual block stations from nine to four in this 60-mile section has been made possible by the installation of automatic block signals which were provided primarily as a safety measure as a part of the program to afford such protection on all main traffic routes. These automatic signals are arranged to give protection for following moves for the normal direction of traffic on the right-hand track, which permits one train to follow another safely at a spacing of about 5,500 ft. However, with the previous method of operation train movements involving a passenger, trains were spaced one full manual block, a distance of about five miles.

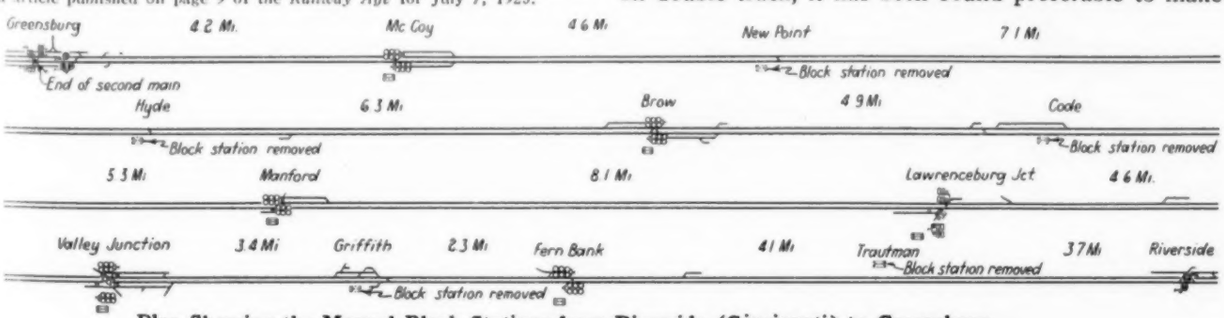
Therefore, automatic signals allow a much closer spacing of trains safely, and several of the manual block stations were no longer required for the protection of trains moving in the same direction.

The practice of either-direction operation on both tracks is continued the same as before, with the additional protection of automatic signals. At the remaining manual block stations, manual block signals are provided to direct movements in either direction on each track.

Why the Change Was a Benefit

In using this method of either-direction operation on double track, it has been found preferable to make

* This method of operation on the Big Four was described in detail in an article published on page 9 of the *Railway Age* for July 7, 1923.



Plan Showing the Manual Block Stations from Riverside (Cincinnati) to Greensburg

the run-around movement for 10 or 12 miles. A study of the recent train sheets shows that there are fewer train delays and train stops with the automatic signal protection, for one reason, because fewer trains are stopped when crossing back to the right-hand track. With the automatic signals there is no need to hold the one train until a leading train clears the manual block.

In order to determine the results in train operation after removing the five manual block stations and installing the automatic signals, a comparison was made of the dispatcher's train sheet for October 7, 1927, before the automatic signals were started, with that for March 24, 1928, after the signals had been in service for several months. As shown in detail in the table, with practically the same number of train movements, there was a reduction from 18 to 12 in the number of crossover movements. Trains were not delayed in order to reduce these crossover movements nor did the reduction in the number of manual block stations delay trains. In fact, it will be noted that, on the average, there was a reduction of 9 min. in the running time of eastbound freight trains and of 12 min. for the westbound trains. For the 44 freight trains operated on March 24, this reduction in time totals 7.7 train hours.

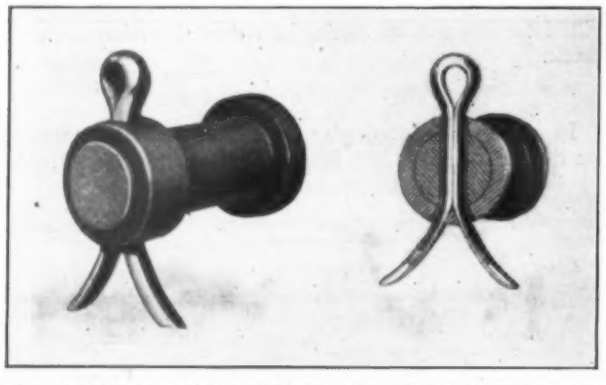
Comparative Operating Statistics—Cincinnati to Greensburg

	October 7, 1927	March 24, 1928
Number of passenger trains	22	22
Number of freight trains	45	44
Number of run-around movements of passenger trains	7	5
Number of run-around movements of freight trains	11	7
Total number of run-around movements	18	12
Average time of eastbound freight trains	3 hr. 23 min.	3 hr. 14 min.
Average time of westbound freight trains	4 hr. 8 min.	3 hr. 56 min.

Based on the heavy traffic season with all block stations in service, the elimination of the five stations permitted a saving in wages of the operators relieved amounting to $913.65 a month.

Self-Opening Pin Collar for Cotter Key

THE principle of the self-opening, self-retaining cotter key as applied to new pins, was described on page 966 in the April 28, 1928, issue of the *Railway Age*. A pin collar for use on any standard pin with a straight hole has been developed by the American Railway Products Company, Inc., 74 Washington street, South Norwalk, Conn., for the purpose of using existing pins.



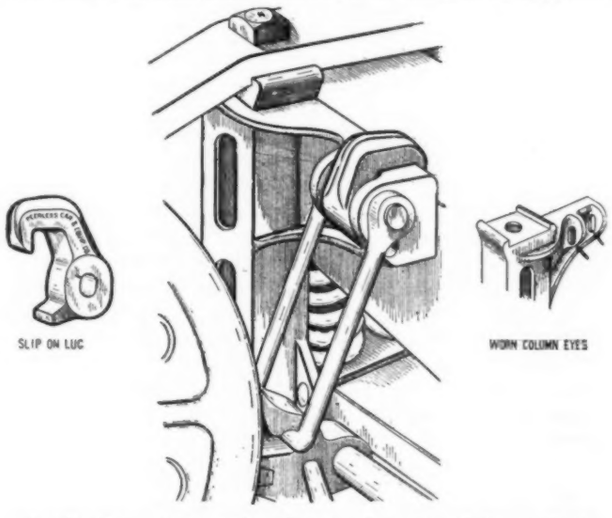
The Application of the Self-Opening Pin Collar and Key on Standard Pins

As shown in the illustration, the pin collar is about ½ in. wide and ¼ in. thick. It is slipped over the end of the pin, the hole in the top of the collar lining up with the hole in the pin. A cotter key is inserted in the top hole and with a few taps of a hammer, it is driven down through the pin and comes in contact with the vee-piece opening wedge, which is integral in the collar. This vee-piece forces the points apart, and they slide past and out through the two holes in the bottom of the collar, thus spreading and locking the key in a single operation.

There is no possibility of a cotter key becoming loose when once inserted. The joints extend well past the outer rim of the collar, and the vee-piece holds the key open strongly and permanently. Nor can the key become twisted or broken, since it is held firmly in the one position.

Column Post Lugs

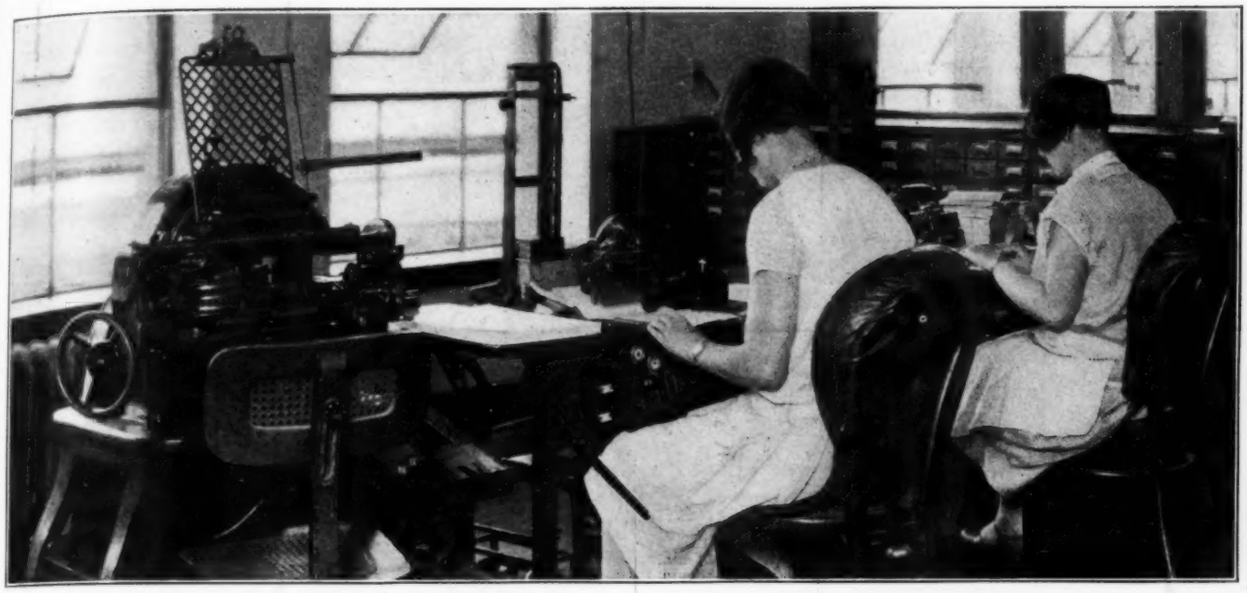
A LARGE number of freight car truck column posts require relatively frequent renewal because of worn eyes in the hanger arms because of the abrasive action of the brake hanger pins in service. When these eyes are enlarged to a dangerous extent, or worn completely through as sometimes happens, it is necessary to replace the column castings, involving a considerable expense in labor and the scrapping of many castings otherwise in good condition.



Application of the "Slip On Lug" to the Column Post

To afford an alternative and less expensive method of repairs, a column post bearing lug has been developed, as shown in the illustration, which is simple, reliable and designed for easy application without removing the original column post. This lug is a small steel casting which can be made to suit any design of column post. It is said that the entire cost of a set of eight lugs, including the labor of application, is not greater than that of one column post.

The new column post lug, known as the "Slip On Lug," is now being applied in considerable numbers on tank car equipment. It is made by the Peerless Car & Equipment Co., Kansas City, Mo., railway sales being handled by Charles F. Palmer, 1110 Straus Building, Chicago.



These Embossing and Addressing Machines Serve Four Operating Divisions

Office Work Speeded Up by Use of Equipment

Timekeeping and payroll makeup facilitated by using addressing machine and narrow forms

By C. C. Malloy

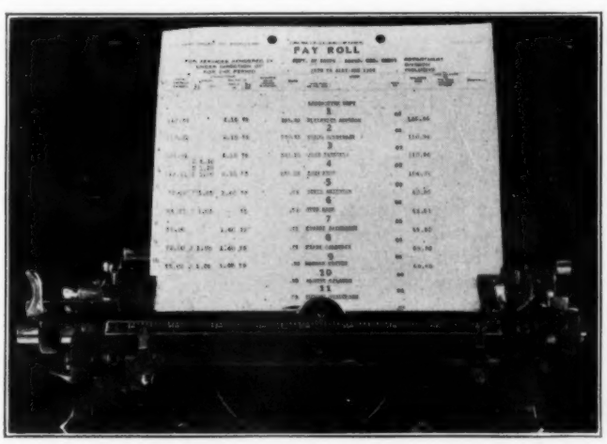
Supervisor, Office Equipment and Methods, Southern Pacific

THE installation of addressing and other machines for making out timekeeping forms, payrolls and pay checks on the Southern Pacific has resulted in an immediate payroll saving running as high as $200 per month on some divisions and has relieved the rush and overtime at payroll periods in large offices. In addition, it has reduced the postponement of regular clerical work which is necessitated during the issuance of payrolls and pay checks to a minimum. The legibility and accuracy of timekeeping forms has also been greatly improved.

Addressing machines for this type of work were first installed in 1913 and the application has been extended until there are now 33 of them employed at various points on the system for writing the names and payroll data for about 85 per cent of the officers and employees. They are not used where the labor turnover is so great that it makes the use of addressing machines uneconomical.

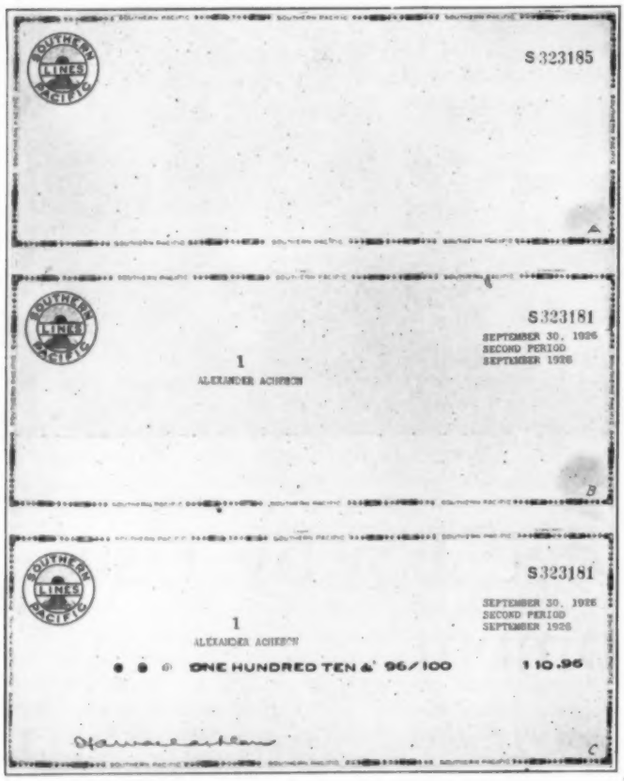
One of the reasons for adopting machines is the inability to centralize the making of payrolls and pay checks at the general office in San Francisco, Cal. This is due to the various laws of the several states traversed by the road. Some require the railroad to pay the employees semi-monthly and insist that pay checks be delivered within five days after the close of the payroll period. As a result the 13 operating divisions and other large departments make their own payrolls and generally their pay checks.

The preliminary work incident to the use of machines includes the making of the metal name plates that are to be used in the addressing machines. On the lower portion of the plate the employee's name, occupation, Interstate Commerce Commission classification number, location, rate of pay and employee number are embossed. While on the upper portion a holder retains an index card which is printed from the lower portion of the plate. The completed plates are filed in payroll order in drawers with a capacity of 175 plates. The plates that are run through the addressing machine, contain embossing for daily time cards, semi-monthly time cards,



Narrow Payroll Is Completed on Correspondence Typewriter

monthly time sheets, I. C. C. statements, payrolls, and pay checks. To make up payrolls, the plates are placed in the addressing machine and are printed mechanically while an operator places the form over the printing area



"A", Blank Check—"B", After Being Stamped by Embossed Plates—"C", After Having Been Protected and Counter-signed by Machine

of the machine. The use of the plates eliminates errors in the spelling of names, rates of pay, etc.

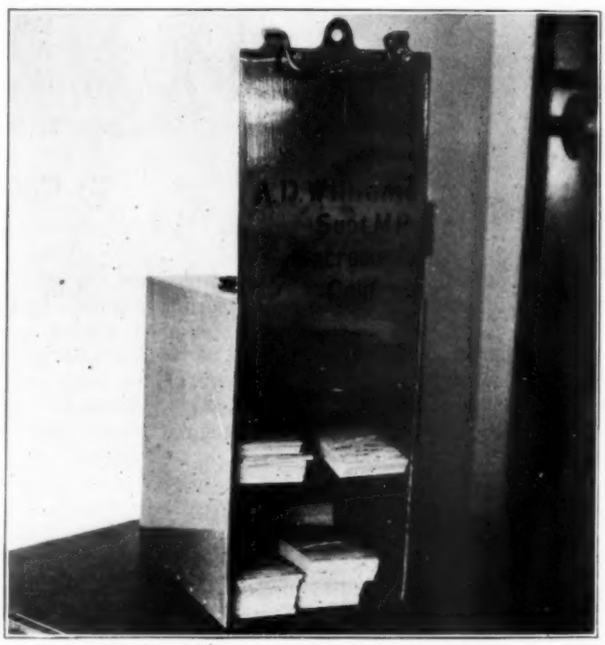
Another factor which has aided in speeding up the making of payrolls is the adoption of a narrow payroll form. Formerly a payroll measuring 14 in. by 17 in. was used, the width of which necessitated a machine equipped with a wide carriage. As payrolls are made in many offices and the cost of providing wide carriage typewriters is excessive, the expense is not warranted since the wide carriage machines are practically idle at times other than during payroll periods. In many offices it was necessary therefore, to write payrolls in manuscript. Even in those offices which were equipped with wide carriage typewriters, inconvenience was occasioned because of the limited number of such machines. This resulted in slowing up payroll work as only a few operators could type on the rolls at one time. In addition wide carriage machines are not capable of as rapid operation as those with smaller carriages.

To make it possible for all offices to type payrolls and to facilitate the typing of them a narrow form of payroll was adopted. It can be typed with a typewriter equipped with the narrow carriage used regularly for correspondence. This narrow form is now used for all payrolls except those for general officers and pensioners, on which rolls so much information has to be shown that the narrow form is impracticable. The narrow form has proved to be satisfactory in that its use has greatly expedited the making of payrolls.

Addressing machines are also used for "blocking out" or skeletonizing payrolls and by this means the labor of making payrolls is reduced over one half, especially on the payrolls for the second period where the number of deductions shown is small. The addressing machines are used for showing the various subdivisions in the payroll, that is, the name of the station, the bureau, the general class of employees, etc. It is often necessary to allow for additions to the payrolls after they have been skeletonized. This is done by placing a few blank plate frames in the drawers and when these plates feed through the machine they automatically space and leave the desired blank on the payroll. Plates embossed with sub-division headings may also be used for this purpose.

Addressing machines are used for printing the name and the employee number on pay checks, "cutoffs" being used to exclude the information on the plates which is not to be shown on the pay check. In case a time voucher has been issued to an employee, the plate is tabbed in order that it may pass through the machine without printing.

A year's supply of blank pay checks is forwarded to each department which is to issue them. These carry a serial number preceded by a designating letter to signify the department which is to issue them. When the addressing machine prints an employee's name, on this check it also prints the proper date and monthly payroll period. By using the machine for this purpose and by assigning each department a consecutive series of numbers for its exclusive use indefinitely and a letter symbolic of the division or department, a year's supply of pay checks can be ordered at one time.



Special Boxes Are Used for Forwarding Time Cards

Formerly an order was placed with the printer for a year's supply of pay checks in skeleton form and two months before they were actually required, an estimate of the needs of each department was obtained. An order was then placed with the printer to print on the skeleton form the date and pay roll period. Due to the impossibility of estimating the exact number of pay checks, considerable wastage resulted. This amounted, in some years, to a loss of about 65,000 pay checks out of a total of approximately 1,700,000 ordered. With the system now adopted, the wastage of pay check forms has been reduced to a minimum.

After the name of the employee, the employee num-

ber, the period and the date have been printed on the forms by addressing machines, the amounts due employees are written on the pay checks by means of a motor-driven check writing machine. The pay checks are next compared with the pay roll, and are then abstracted and balanced by means of motor-driven adding machines. In listing the amounts of pay checks on the abstracts, operators use the figures made by the check writing machines, thus providing a double check on the amounts of the pay checks.

An autograph signature plate bearing an electrotyped facsimile of the signature of the person authorized to countersign pay checks, is used in motor-driven machines to sign checks. Through its operation pay checks are countersigned in a fraction of the time necessary to sign them in manuscript, even when machines were used to sign five checks simultaneously.

The notification of any plate changes is made by means of a special form. This is filled out by timekeepers and is forwarded to the addressing machine bureau at regular intervals.

Master Boiler Makers Meet

THE nineteenth annual convention of the Master Boiler Makers' Association, marking the twenty-first anniversary of the Association, was held at the Hotel Hollenden, Cleveland, Ohio, May 21 to 25. About 600 members, guests and members of the Boiler Makers Supply Men's Association were in attendance. Sixty companies supplying boiler shop equipment held an instructive exhibit in connection with the convention.

The following officers of the Association were elected at the Thursday, May 24, session for the coming year: President, L. M. Stewart, Atlantic Coast Line; first vice president, G. B. Usherwood, N. Y. C.; second vice president, K. E. Fogerty, C. B. & Q.; third vice president, F. T. Litz, C. M. St. P. & P.; fourth vice president, O. H. Kurlfinke, S. P.; fifth vice president, I. J. Pool, B. & O.; secretary, H. D. Vought, and treasurer, W. H. Laughridge, Hocking Valley.

President W. J. Murphy, division boiler foreman, Pennsylvania, was in the chair throughout the convention. At the opening session an address was delivered by R. H. Flinn, superintendent of motive power, Pennsylvania Railroad, on the development of railroads and the part played by master boiler makers in bringing about the reduction of bad order locomotives. The future of the nation's industries depends largely on the continuance of the high degree of efficiency in the operation and maintenance of transportation that has been built up during the past few years, he said.

A. F. Jensen, president of the Hanna Engineering Works, delivered an instructive talk on "The Age of Riveted Steel," which was aptly illustrated by a moving picture film, outlining the manufacture and application of rivets in a wide range of fields, including ship construction, bridge fabrication, steel building erection and in locomotive and car construction.

At the Wednesday morning session, W. R. Lye, district superintendent of motive power, New York Central Railroad at Collinwood, Ohio, in a talk to the Association developed the thought that one of the greatest functions which the Master Boiler Makers' Association can perform is the general education of apprentices in the trade of boiler making. He also dwelt on the value of meetings of this kind in promoting the knowledge and welfare of all those interested in the trade, which in turn reacts to the betterment of the mechanical departments of the railroads of the country.

At the opening of the Thursday session, President Murphy introduced W. E. Woodward, vice president of the Lima Locomotive Works, Lima, O., the subject of whose address was "Modern Locomotive Design and Its Influence Upon Railroad Operations." This talk was accompanied by the showing of an extensive moving picture, dealing with the development of the locomotive in size, efficiency and economy from the early days. The Lima A-1 locomotive typifying the great advance in modern design was used as a basis of comparison with other types. The final address was delivered by A. G. Pack, chief inspector, Bureau of Locomotive Inspection of the Interstate Commerce Commission. In his remarks Mr. Pack outlined the importance of properly designing and building locomotives and then of adequately maintaining them. Since the fiscal year 1923, the Bureau has been able to report a marked improvement in the condition of the locomotives of the country. In that year the percentage of locomotives inspected and found defective amounted to 65 per cent, while the number of accidents was 1,348. In the fiscal year 1927, the number of defective locomotives had been reduced to 31 per cent and the number of accidents to 488. During the first five months of the present fiscal year the number of defective locomotives amounted to only 25 per cent and the number of accidents to 322. These results were obtained through more thorough inspection and timely and proper repairs. Mr. Pack then outlined means which will do much to prevent and relieve the results of crown sheet failures caused by low water, including the application of modern appliances, such as thermic syphons, the use and maintenance of reliable feedwater appliances, and the application and maintenance of water glasses, water columns and gage cocks that will accurately register water level under all conditions and so located that they may be quickly and accurately read without materially distracting the attention of the engine crew from their other important duties.

Probably the most important of the committee reports presented during the business session was that on the subject of Boiler Corrosion and Pitting. A number of prominent water-service engineers including Dr. C. H. Koyl, C. M. St. P. & P.; R. C. Bardwell, C. & O., and R. E. Coughlan, C. & N. W., took part in the discussion following the reading of the paper. In general, this discussion dealt mainly with various water treatments that have been developed to prevent pitting and corrosion, including open and closed feed water heaters, soda ash treatments, various electrolytic methods, among which was mentioned the metallic arsenic treatment for the interior of boilers developed on the Chicago & Alton. C. A. Seley, consulting engineer of the Locomotive Firebox Company, Chicago, Ill., pointed out the value of proper circulation of water in the boiler as an aid in cutting down the ravages of pitting and corrosion and explained methods developed in foreign locomotive practice, especially those of the German State Railways, to avoid the difficulty. A report on Fusion Welding was presented for discussion. This report described in detail the wide range of application of various welding processes throughout the industries in general, and to locomotive firebox welding and the application of boiler patches in particular. This report and the report of A. F. Stigelmeier, general foreman boiler maker, New York Central, who is serving on the joint pressure vessel and welding committee of the American Society of Mechanical Engineers, will be brought to the attention of the Mechanical Division, American Railway Association.

The remaining reports prepared by special committees treated with problems which occur in the repair and maintenance of locomotive boilers.

Railway Legislation Left to Next Session

WASHINGTON, D. C.

THE first session of the seventieth Congress adjourned on May 29 without having enacted a single piece of direct railroad legislation, either of the kind desired by the railroads, such as the consolidation bill and the anti-scalping bill, or of the kind which they oppose. The earlier stages of legislation had been reached, however, on several bills, and they, with others which have thus far received no attention, will retain their status pending the reconvening of the short session which begins in December.

Congress did pass one bill which seriously affects the railroads and which they vigorously opposed in the form in which it was proposed and passed, the Denison barge line bill which appropriates $10,000,000 to further subsidize the government's barge line service on the Mississippi and Warrior rivers in competition with the railways and enable it to extend its service to their tributaries and to procure additional equipment. The bill which was signed by the President May 29, increases the capitalization of the Inland Waterways Corporation from $5,000,000 to $15,000,000, the additional amount to be subscribed by the government, and authorizes a further extension of the "experimental demonstration" that barge line service on a waterway maintained by the government, at rates fixed arbitrarily at 20 per cent below the corresponding rail rates is cheaper (to the shippers) than rail service.

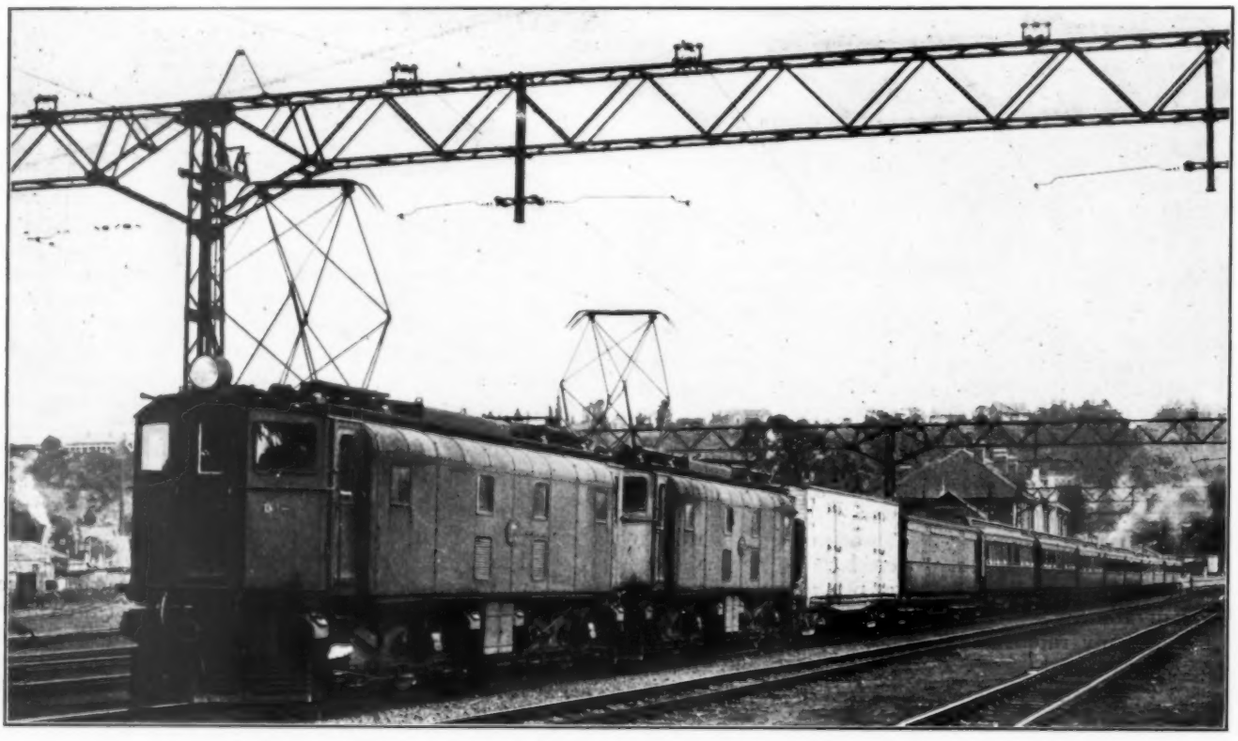
The bill also contains provisions directing the Interstate Commerce Commission to require railways to turn over traffic which they could haul to water lines by establishing joint traffic arrangements when the carriers fail to agree upon them. The theory of the bill is that the government corporation will continue to maintain the service until conditions have been created under which private capital will be willing to engage in common-carrier service on the rivers and it provides that the Secretary of War may sell or lease the facilities in the event of the fulfilment of the conditions.

The bill was passed by the Senate on May 26 with very little debate, although extensive hearings on it had been held before the House committee before its passage by the House, and the conference report was adopted by both Houses on May 28. Whereas the House bill had provided that the facilities of the Inland Waterways Corporation "or any unit thereof" could be sold, the Senate struck out the words "or any unit thereof," but the conferees adopted language so that the facilities on the Mississippi river and its tributaries shall be considered as one unit and those on the Warrior river and its tributaries as another. A Senate amendment also authorized the Secretary of War to make a survey of the possibilities of the inland water route from Boston to Beaufort, S. C., and report to Congress.

The bills passed by the Senate, the steel postal car bill and the Pittman bill to relieve short lines from recapture, were not acted upon in the House at this session, and the resolution to amend the Hoch-Smith resolution to include products of fisheries with agricultural products as entitled to special consideration in rate-making, was not considered in the House. No railroad bills were passed in the House.

An effort was made to obtain a vote in the Senate on the Pullman surcharge bill on the last day of the session during a call of the calendar, but as objection was made the bill went over.

* * * *



Train on Electrified Section, South African Railways, Natal

Accidents Investigated in Month of November

THE Bureau of Safety, Interstate Commerce Commerce Commission, in the month of November, 1927, investigated seven train accidents; two collisions and five derailments. Abstracts of the reports on these investigations by the chief of the Bureau follow:

Texas & Pacific, Donaldsonville, La., November 6.—A westbound passenger train, moving at about 50 miles an hour, ran over a misplaced switch through a No. 9 turnout and collided with freight cars standing on the siding, the estimated speed at the moment of impact being 30 miles an hour. The locomotive crashed through the first freight car and wrecked the next two; and the remaining 20 cars were pushed forward 525 ft. The fireman was killed and five passengers and one employee were injured. The switch in the course of switching operations had been left open, for which switchman Finn is held responsible. The switchman tried to make out that he had set the switch straight and that it had been tampered with while he was at work some little distance away, but the inspector finds no confirmation of this story. The switch target in this case was visible about 1000 feet away but as the train was moving at a high rate of speed, the inspector says that "under the circumstances it is not felt that the engineman can be held responsible."

Southern, Loudon, Tenn., November 10, 6:52 p. m.—Westbound passenger train No. 25, moving at about 35 miles an hour, was derailed at a point where the track had been maliciously loosened, and the engineman was killed; three passengers and two employees injured. The locomotive and first three cars fell down a bank. The loosening of spikes and pushing the rail to one side, was estimated to have required the time of one man 20 minutes (in daylight); and as a train had passed in safety only 27 minutes before the occurrence of the wreck, it is assumed that probably more than one man was engaged in the crime.

Atlantic Coast Line, Chatmar, Fla., November 11, 10:20 p. m.—A northbound freight train of 35 cars, hauled by a locomotive which was running backward, was derailed at a point where new ballast was being put under the track and the engine and tender were overturned. The fireman was killed. The inspector believes that the derailment was due to uneven surface of the track.

The ballast was even with the tops of the rails but there was no evidence that this was the cause of the derailment. Possibly the regulation speed for locomotives running backward, which is 15 miles an hour, was being exceeded.

Great Northern, Red Eagle, Mont., November 12.—Westbound mail train No. 27, consisting of a locomotive and eight cars (no passengers) was derailed while moving over a curve of 10 degrees at about 35 or 40 miles an hour, and the locomotive fell down a high bank; and the engineman and fireman were killed. Five mail clerks were injured. The conclusion of the inspector is that the derailment was due to excessive speed. The rule forbade any rate over 25 miles an hour, the elevation of the outer rail being between 4 and 4¼ in.

Pennsylvania, Indianapolis, Ind., November 17, 4:19 a. m.—Eastbound passenger train No. 306, consisting of two locomotives and 13 cars, was derailed while moving at low speed over a curve of 7 deg., 52 min., the train having just started out from the station and the line being up-grade at about 26 ft. to the mile. The derailment occurred at a No. 10 frog, on a viaduct, and the leading engine, breaking away from the second one, fell off the viaduct and landed on its left side. The fireman of this engine was killed and two employees were injured. The cause of derailment was not definitely ascertained. There were nine switch ties found in bad condition and the rail on the outside of the curve at one point was ¾ in. lower than the inside rail; it also appeared that the gage was not uniformly maintained; but because of the low speed—the highest estimate being only 12 miles an hour—it is not believed that the faults in the track could be deemed to be the cause of the derailment, though possibly these were factors.

Central of Georgia, Covington, Ga., November 24, 11:06 a. m.—A westbound freight train, moving at about four miles an hour, collided with an eastbound motor car moving between 25 and 45 miles an hour, wrecking the motor car and causing the death of two of its occupants, J. Reichert, superintendent of the division, and Roadmaster Burch; and injuring two other employees. The motor car was a Ford automobile, converted to run on the rails, and it was equipped with four-wheel brakes. It was in charge of Superintendent Reichert and how he come to encroach on the time of the freight cannot be determined. The collision occured a very short distance west of Covington. Before the freight started from that point, Mr. Reichert, who was there, had explained to the conductor of the freight his intention to precede the train to Porterdale, about five miles, and said that he needed no train orders; would keep out of the way of the freight; and he had made this trip and was returning toward Covington when the collision occurred. The two surviving men on the motor car knew that the time of the freight was being encroached upon, but both of them assumed that the superintendent knew what he was about and made no protest against the eastward movement. The roadmaster, the track foreman and the motor car attendant "attempted both verbally and by action to warn the superintendent of the existing danger, but did not explicitly call his attention to the matter." There is a definite rule that motor cars being run over the road must be dealt with exactly the same as a regular locomotive.

Dayton Union, Dayton, Ohio, November 29, 8:45 a. m.—An eastbound freight train of the Cleveland, Cincinnati, Chicago & St. Louis was derailed at a frog about 3700 ft. west of the passenger station and the locomotive ran against the side of a westbound passenger train of the C. C. C. & St. L., overturning and badly damaging two passenger cars and doing much other damage. One passenger was killed and two passengers and six employees were injured. Each of the trains was moving at about 15 miles an hour. The report finds the cause of the accident to have been poorly maintained track, coupled with the absence of a guard rail at the frog of a trailing-point switch. The guard rail had been taken out, preparatory to the laying of a new one, the track foreman having assured himself that no movements were to be made against the current of traffic; but the inspector seems to hold that if the guard rail had been in place, the defects in line and surface would not have been sufficient to cause the derailment.

Communications and Books

Criticises College Graduates' Attitude

MASSACHUSETTS.

TO THE EDITOR:

I feel compelled to answer the letter in the *Railway Age*, of April 28, page 981, signed by "Professor, Business Administration", which purports to show the hardship attending a college man's efforts to obtain success in the railroad field. I do so principally in defence of those of us who are not college men and perhaps to say a word or two in behalf of some college men who may still feel the "railroad urge", or who are now in the game and feel satisfied they are being compensated according to their respective ability.

I graduated, with some success, from high school in 1916 and shortly thereafter entered the railroad service as an office boy in the freight traffic department of one of the large railroads at a monthly salary of $30, or $6.90 per week. My hours were approximately 7:30 a. m. to 5:30 p. m. At the end of four years, equivalent to the time one would spend obtaining a college education, I was secretary to one of the freight traffic officials at a weekly wage of about $35. Now after 12 years service I am still a secretary but to a much higher official and at a correspondingly higher salary, and which position I feel was obtained only because of the practical experience previously gained and my own application to the "job".

The "Professor" complains because after 4½ years college work he was offered a position by a railroad, after his own solicitation, at a monthly salary of $87.50; whereas he thought he should have been offered $125 because of his college training. While in his particular case he had had six years previous railroad service, the "Professor" emphasizes that because of his college training he should have received greater consideration; in fact been received with open arms much after the fashion of a conquering hero. Perhaps in his particular case there was a "miscarriage of justice", but when he attempts to establish a high minimum for college men—in other words, to place a premium on the services of such men in spite of their lack of a practical training—he is himself creating a "miscarriage of justice".

It has been said "by your labors shall ye be known". If any man, whether he be college bred or not, desires to succeed in his chosen field of endeavor he should first of all possess a sincere wish to give his all to that work and demonstrate by his own labors his qualifications for advancement. The road to success is anything but smooth and until one learns to overcome the obstacles blocking the pathway, gained only through experience, "success" will be merely a question mark.

The "Professor" ends his letter by saying, "The idea that one can learn nothing about the railroad business except via the school of hard knocks is not as prevalent today as it was 15 or 20 years ago". This statement, no doubt, is true to some extent, but a technical training alone will never make for success in the railroad field, or in any other field for that matter. Practical experience is absolutely necessary and stretched over a period of years. I will readily grant that a college man in the railroad field who likewise has obtained the necessary practical training and who has applied himself wholeheartedly to the job, should be an asset to any railroad. The idea, however, of setting a minimum salary as suggested by the "Professor," simply because a man is college bred is to my mind ridiculous. Let him first prove his worth and readiness to take the "hard knocks" while seeking practical experience and he will soon forget about the "minimum".

My present "chief" is a college man but would never have reached the position he occupies today, regardless of his college training, unless he had also graduated with high honors from the school of "hard knocks", thereby obtaining that practical experience which is so essential.

It may be that I have misunderstood the "Professor" but from my understanding of what he writes, I felt compelled to make answer as above. I further believe he is overreaching when he attempts to discourage college men from entering the railroad field. He appears to be trying to place college men on a pedestal where they can look down upon or be looked up to, by their less fortunate brethren (?). I doubt very much if it is the desire of the majority of college men to be so placed. Let them first prove their "superiority".

C. R. E.

Co-operative Travel Advertising

NEW YORK CITY.

TO THE EDITOR:

An editorial comment in your issue of April 28 pertaining to railroad advertising gives rise to the question, "What relative proportion of earnings do railroads appropriate to advertising in comparison with other national advertisers, such as motor car manufacturers, steamship lines, hotel systems and food and confectionery producers?"

As your editorial points out, it is apparent that the railroads are spending more money in advertising and the recent announcement that ticket validations on the Pacific Coast last summer exceeded those of the previous year indicates that the advertising was productive of increased business. But there is no definite measure which can be applied to determine whether railroads are spending as much in proportion to their earnings (in which connection, presumably, only passenger revenues could properly be considered) as are other national advertisers whose advertisements scream at the reader from every publication—daily or monthly—and whose billboards deface the countryside from Maine to California.

If percentages could be compiled, either for individual railways, for sectional groups, or for the roads as a whole, to denote the relative amount of earnings devoted to advertising for additional business, a fairly accurate check might be made against the appropriations of some of the well-known advertisers whose expenditures run well into the millions annually.

It would also appear to those who are interested in seeing the railroads develop a tourist travel in the United States that some of the advertising of the railroads, in season, might be coordinated. When four railways, each seeking to interest people in travel to the Pacific Coast, offer their attractions on different pages of the same newspaper, the appeal is less effectively made than if this were combined on one page.

Suppose that four western roads bought a full page, based the leading appeal, at the top of the page, upon seeing the western country, at the low rates which the roads offer for tourist travel. The thought is thus focussed upon travel, and, specifically, upon travel in the western part of the United States. The rest of the page could be divided equally among the four roads, permitting each to exploit one of its own scenic attractions—as for examle, the Grand Canyon by the Santa Fe; the Yellowstone Park by the Northern Pacific; the Zion National Park by the Union Pacific and the Glacier Park by the Great Northern—with a statement below indicating that the prospective traveler may go by one route and return another.

Thus, the railway appeal is concentrated and magnified; more space is available for an exploitation of the scenic wonders of the west than any one road could afford to purchase itself. The advertising is essentially cooperative rather than competitive and each of the roads contributing to it stands an equal chance of getting its share of the business developed.

There appears, incidentally, to be a growing thought in the public mind that a trip abroad is essential to one's cultural progress and that travel in North America in no sense carries the prestige which a trip to Europe produces. Whether railway advertising can overcome this unfortunate viewpoint might also be worth considering.

It cannot be doubted that railway passenger salesmanship has improved immeasurably in the past two or three years. Direct-by-mail work, with effective follow-up, is resorted to and in

other ways the drive to rebuild the passenger business denotes intensive thought and skillful planning. But if "it pays to advertise," it is reasonable to assume that it would pay doubly to advertise cooperatively, rather than competitively. Also, that if the advertising is to be considered adequate, definite proofs must be found to indicate that the railroads are spending as much, proportionately, as their steamship friends are in developing European travel.

FRANKLIN SNOW.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Safety Poems, Both Serious and Otherwise. A revised and enlarged edition. 40 p. Pub. by National Safety Council, Chicago.

Suburban Service—a Brief List of References. References to books and periodical material covering developments from 1920 to 1928. 13 p. Pub. by Library, Bureau of Railway Economics, Washington, D. C. *Apply.*

Railway and Commercial Telegraphy, edited by Charles E. Parks. Besides practical current problems in telegraphy this volume includes some history of the use of the telegraphy and sketches of careers of railway officials who began as telegraphers. Pub. by LaSalle Extension University, Chicago.

Airplanes and Terminals, by T. C. Powell. The President of the Chicago & Eastern Illinois outlined development of aviation and discussed co-ordination of transport, the present freedom of aviation from restrictions, the possibilities of air service, and consolidation of "the necessary terminals for the proper functioning of the railroads, airplanes, motor vehicles, and including terminals for water service at all points on navigable waters," in this address to Western Railway Club. 26 p. Pub. by Chicago & Eastern Illinois, Chicago. *Apply.*

Periodical Articles

Rail and Air. Editorial comment on the rail-and-air transcontinental service being inaugurated. Air Transportation, May 26, 1928, p. 6.

The Lake Cargo Rate Case of February 1928, by T. W. Arnold. "History of the Lake Cargo decision" p. 273-276. "Theory and reasons for Lake Cargo decision" p. 276-282. West Virginia Law Quarterly, April 1928, p. 272-282.

The New California in Western Mexico—a Railroad Opens up Another Empire Facing the Pacific, by John Anson Ford in collaboration with Gregory Mason. An illustrated history of the extension of the Southern Pacific of Mexico. Map, p. 171. World's Work, June 1928, p. 171-179.

The Problem of Valuation. I. The Evolution of Cost of Reproduction as the Rate Base, by Edwin C. Goddard. II. The Economic Merits of Original Cost and Reproduction Cost, by James C. Bonbright. Harvard Law Review, March 1928, p. 564-622.

The Proposed Trans-Saharan Railway. One of the very few comprehensive articles in English giving estimated cost, one billion six hundred million francs, traffic possibilities, and safety which in this case means primarily security from tribal raids. Map p. 366. Bulletin of the International Railway Congress Association, April 1928, p. 365-468.

Influence of Transport on Industrial Development, by Prof. W. Hamilton Whyte. ". . . In face of so vast and complex a subject, the observations following will be ranged round the three main heads:—(i) The influence of transport facilities upon the increase of goods and service both in volume and variety. (ii) The influence upon the character and methods of trade. (iii) The influence upon social customs and standards, and generally the treatment of the subject will be limited to Great Britain, except for purposes of illustration and contrast." p. 345. Journal of the Institute of Transport, May 1928, p. 344-353.

Looking Backward

Fifty Years Ago

The property of the Baltimore, Philadelphia & New York, consisting of the charter and some right-of-way, was sold recently under foreclosure to the Wilmington & Northern (now part of the Reading) for $75.—*Railroad Gazette,* May 31, 1878.

One of the most remarkable examples of engineering enterprise and boldness is found in the narrow-gage extension, just completed, of the Colorado Central (now part of the Colorado & Southern) from Black Hawk, Colo., to Central City. By means of zigzagging switches the road was built to climb an elevation of 563 ft. over a route 4⅛ miles in length, although the distance between the two places is one mile.—*Railway Age,* May 30, 1878.

It is now certain that there is little prospect of the passage at this session of Congress of the bill for the regulation of interstate commerce. On May 28 an attempt was made to have the bill taken up for consideration by the House, but the motion was defeated by a vote of 122 to 107, which indicates the sentiment of that body on the question. The motion was renewed on a subsequent day, only to meet the same fate and the view was expressed that the good sense of Congress will prevent the adoption of such a radical and inconsiderate measure. —*Chicago Railway Review,* June 1, 1878.

Twenty-Five Years Ago

Two bills are now pending in the Canadian Parliament for the construction of railways to Hudson's Bay. One bill would grant the Hudson's Bay & Western a charter to construct a line from Port Simpson, on the Pacific Coast, to Fort Churchill, on Hudson's Bay, about 1,500 miles. The railway committee of the House of Commons has reported favorably a bill authorizing the construction of a line from the United States boundary, through Regina, Sask., to Fort Churchill.—*Railway Age,* June 5, 1903.

The Louisville & Nashville has decided to close its coal agencies and hereafter will be only a carrier. The development of the Kentucky mining interests by the railroad has been followed by individual developments and a large trade has been built up. Now the Louisville & Nashville finds itself in competition with other companies whose output it must carry, and in times of car shortage has been accused of discrimination in favor of its own coal.—*Railway and Engineering Review,* May 30, 1903.

Ten Years Ago

A delegation of Colorado citizens headed by a United States senator called at the Railroad Administration on May 29 to urge a loan of $6,000,000 to the Denver & Salt Lake to build a proposed tunnel under James Peak.—*Railway Review,* June 1, 1918.

Director-General McAdoo has issued an order putting into effect increases in wages for all railway employees receiving less than $250 per month recommended by the Railroad Wage Commission. The order is made effective as of January, 1918.—*Railway Age,* May 31, 1918.

General advances in freight rates and passenger fares to apply to both interstate and intrastate traffic were ordered in telegrams dispatched to the railroads on May 25. Freight rates are to be advanced 25 per cent, effective June 25, and passenger fares are to be advanced to a minimum of 3 cents per mile, effective on June 10.—*Railway Age,* May 31, 1918.

ONLY TWO FATALITIES TO PASSENGERS in passenger train accidents have occurred on the Chicago, Rock Island & Pacific since 1919, although during that period of eight years 7,163,436,511 passengers were carried one mile. One of the accidents occurred in 1923 and the other in 1924.

Odds and Ends of Railroading

Seeing our note about the painting of station names in large letters on the roofs of station structures for the guidance of aviators, M. L. J. writes us a caustic note inquiring why the railroads do not first paint station names in large letters for the benefit of their own passengers. "Station name-painting," he says in closing, "like charity, ought to begin at home."

Learn One New Thing Each Day

To most railway men, the following, which appeared in many newspapers as a syndicate feature, will come as a distinct surprise:

"Many people think that a train is kept on the rails by the flange or rim that is on the inside edge of the wheel. This flange steadies the car but does not keep it on the rails. The rail is slightly rounded on top, as is the rim of the car wheel, so that the wheel does not rest squarely on the rail. The outer circumference of the wheel is smaller than the inner and the wheel rests on the inner slope of the rounded rail. In running, the wheels press outward because it is easier for them to run along the smallest edge and on top of the rail. By pushing outward and exerting the same force in opposite directions the wheels keep each other balanced and on the rails."

It is strange that, with the railways employing so much engineering talent, no railway engineer ever thought of that.

The Missing Train Mystery

The thrill of mystery surrounding the fate of a missing girl appears to have been transferred to the apparently mysterious disappearance of an entire flock of Southern Pacific passenger trains plying between Sacramento and San Francisco. Each day 15 passenger trains leave San Francisco for the Capital City. Each day but 14 of these trains return. What becomes of the missing daily train? That question has aroused interest and inquiry throughout the entire state, if letters received by F. S. McGinnis, passenger traffic manager, may be taken as an indication. Recently the company commenced advertising its passenger train service between the two cities from the studio of a local radio broadcasting station. "Fifteen trains daily to Sacramento; 14 trains daily from Sacramento to San Francisco." Such was the substance of the advertisement. Then letters began to flood in. McGinnis explains that the apparently missing train is not missing at all, but returns to San Francisco as a mail train only and therefore had not been listed on passenger schedules.

A Division Famous As a Stepping Stone

The consolidation of the Richmond division of the Pennsylvania with the Cincinnati division recalls the unusual number of former superintendents of the Richmond division who have progressed to bigger jobs. One of its early superintendents was W. B. Leeds, the multimillionaire tinplate king. Its first superintendent was H. I. Miller, who later served in executive positions with the Vandalia, the Chicago, Rock Island & Pacific, the Chicago & Eastern Illinois and as vice-president of the Automatic Straight Air Brake Company. George LeBoutillier and A. C. Watson, vice-president and chief engineer, respectively, of the Long Island, are both former superintendents of the Richmond division, as are the following officials of the Pennsylvania: G. L. Peck, vice-president; J. C. McCullough, assistant to general manager, Central region; W. B. Wood, assistant to general manager, Western region; W. C. Higginbottom, general superintendent, Northern general division; and F. J. Stimson, assistant chief engineer, maintenance of way, Western region.

An Interesting Railway Family

The recent retirement of William Cotter as president of the Manufacturers Railway of St. Louis recalls that he comes from an interesting railway family. He is the oldest of four brothers, sons of a section foreman, who worked for the Chicago & Alton many years at Towanda, Ill. All of the brothers learned telegraphy at the station at Towanda, and all became railway officers. William became dispatcher, trainmaster, superintendent, general superintendent, general manager and president of various lines, having been president of the Pere Marquette and president and chairman of the board of the Chicago, Peoria & St. Louis, before going to the Manufacturers Railway. John Cotter worked for various lines in this country, later serving many years on the railways in Guatemala. He is now with the Peoria & Pekin Union. Stephen Cotter has been in the service of the Wabash for 42 years, and is vice-president and general manager of that line. George Cotter was dispatcher and trainmaster on the Wabash and the Grand Trunk, later being appointed general superintendent of the Colorado & Southern. He resigned some time ago because of ill health. In addition to the four brothers, two sisters, Mary and Margaret, were also telegraphers, and assisted in educating their brothers in the intricacies of the Morse code.

Another Instance of Railroad Humanity

"Speaking, as you were recently," writes R. F. D., "of railroads lending the helping hand, readers of Odds and Ends of Railroading might be interested to know that some months ago, the writer was riding on a Southern Pacific train and was engaged in conversation in the observation car by a passenger who told how his son and two boys of similar age, namely about 16, had run away from home a day or two before with the intent of walking the railroad tracks from Ogden to California. The worried parents notified the railroad officers, who in turn sent out an alarm along the right-of-way. The next day, a roundhouse foreman phoned Ogden that he had seen the boys passing that point. The father caught the express upon which I was riding, and having told his story to the engineer and conductor, it was agreed that a sharp outlook would be kept, and when the boys were seen the train would stop.

"About an hour later we heard the whistle blow, the train slowed down, and sure enough, sitting on a pile of ties, were the three boys. The father left the train at this point and the last we saw of him, he was surrounded by the three boys engaged in earnest conversation.

"All of which goes to show, railroads are useful in more ways than one."

Railroading a Friendly Business

Railroading in Kentucky is a friendly business in the opinion of the Newark, N. J., Evening News, which, in the support of this opinion, says:

"From Hodgenville, where Lincoln was born, to Elizabethtown in an adjoining county, runs a branch line of the Illinois Central. Only twenty miles separates the two municipalities, but the railroad has been big enough to produce Engineer A. G. Bush.

"Bush, like many another good man, wears false teeth. On a certain recent day he pulled his engine out of Hodgenville, and as the old girl was pickin' up nicely, he sneezed. Something gleaming in white and gold flew through the air. 'Gol dern!' remarked Mr. Bush, or its equivalent in Hardin county expletive.

"So he put her in the big hole and gave her the air, which is enginese for a sudden stop. For a mile he backed his train, seeking among the daisies for that which had gone. Nothing doing. He resumed his interrupted way, mumbling, looking back.

"A glad cry from a faithful knot of searchers left behind, Bush, above the rattle and roar, hears. Again he halts his train; again he backs 'er. That which had been lost was found.

"Again cheerfully grinning, Bush pulls 'er wide open for Elizabethtown. Passengers grin with him. Everybody is happy."

NEWS of the WEEK

The Southern Pacific—Gila River Bridge in Arizona

THE SIGNAL SECTION of the American Railway Association will hold its eighty-third state meeting at the Ambassador Hotel, Atlantic City, N. J., September 11, 12 and 13. The thirty-fifth annual meeting will be held at the Stevens Hotel, Chicago, March 4 and 5, 1929.

DIVISION 6 of the Interstate Commerce Commission has issued a report approving, with exceptions, the installation of the automatic train-control system of the Union Switch & Signal Company on the Richmond, Fredericksburg & Potomac from North Acca to Alexandria, Va., 101.6 miles, including the equipment of 66 locomotives at a cost of $432,810.

FOLLOWING the completion of the Tower building of the new Union station at Cleveland, O., the office of the assistant vice-president of the New York Central and his staff in that city has been removed to that building. In addition to the assistant vice-president the special counsel, the general attorney and the consulting engineer at Cleveland will be located in this building.

THE CITY ATTORNEY of Los Angeles, Cal., has signified the intention of that city to apply to the Supreme Court of the District of Columbia for a writ to compel the Interstate Commerce Commission to issue an order requiring the railroads entering Los Angeles to join in the construction of a union passenger station in the Plaza area. Attorneys for the city believe that the Commission has the authority to issue an order to build the station without waiting for an application by a railroad inasmuch as a federal court and the United States Supreme Court have indicated that the final power over the railroads in this matter was vested in the Commission.

THE CENTRAL OF NEW JERSEY and the New York & Long Branch placed automatic train control in operation on May 31, throughout the line from Elizabeth avenue, Elizabeth, N. J., southward to Bay Head Junction, N. J., the southern terminus of the New York & Long Branch, a total distance of 52 miles, double track. This line is traversed by trains of both the Central of New Jersey and the Pennsylvania. Some of the locomotives have speed control and some have not. On those without speed control, the cab signals have four aspects, including (a) proceed; (b) approach next signal at restricted speed; (c) proceed at restricted speed prepared to stop at next signal; (d) proceed at low speed prepared to stop short of any obstruction.

THE CENTRAL and L. & S. Division Foremen's Clubs of the Central of New Jersey held their third annual "get together" meeting May 26 at Allentown, Pa. A special train carried members of the clubs from Jersey City and intermediate to Allentown and return. Attendance approximated 500.

O'Fallon Case to Be Argued in October

The Supreme Court of the United States has assigned the argument on the St. Louis & O'Fallon recapture valuation case, on the appeals filed by the railroad and by the government from the decision of a three-judge court sitting in the district court for the eastern district of Missouri, for Ooctober 1.

Hearing on Accounting Rules to Be Resumed

The Interstate Commerce Commission has announced that hearings on its proposed general revision of accounting rules for steam railroads will be resumed before Commissioner Eastman and Examiner Bunten at Washington on June 14. The program provides first for cross-examination of witnesses who have been heard, to be followed by the presentation of evidence on behalf of the railroads.

Extend Time for Investigation of N. P. Land Grants

The House on May 24 adopted a joint resolution amending the resolution directing the Secretary of the Interior to withhold his approval of the adjustment of the Northern Pacific land grants, which have long been in controversy, to extend to June 30, 1929 the time for the investigation which has been conducted by a joint congressional committee. The amended resolution provides that the joint committee shall have leave to report at any time by bill or otherwise.

Second National Fuels Meeting

The second national meeting of the Fuels Division of the American Society of Mechanical Engineers will be held in Cleveland, Ohio, September 17 to 20. The general arrangements committee, under the chairmanship of Colonel Elliott H. Whitlock, is planning a comprehensive program to include papers by a distinguished group of nationally recognized authorities on the production, distribution and efficient utilization of fuel.

Western Enginemen's Demand for More Pay

The Brotherhood of Locomotive Engineers asks of the western railroads an increase in wages of 15 per cent, and modification of the rule under which runners of heavy engines receive the highest rates. It is requested that on Mallet engines having more than 350,000 lb. on drivers the rate shall be 25 cents additional for each 50,000 lb. Negotiations having failed, it was agreed, on May 21, to submit the matter to a board of six arbitrators. Negotiations have been carried on by W. M. Jeffers, general manager of the Union Pacific; Al. Johnson of the B. of L. E., and John Williams of the U. S. Board of Mediation. For arbitrators, the railroads have selected J. W. Higgins and W. J. Jackson.

Frisco Opens Terminal at Yale

The St. Louis-San Francisco opened its new freight terminal at Yale, Tenn., on May 27. This terminal, which cost $1,750,000, is located in a suburb of Memphis and covers 175 acres of ground. The necessity for the new terminal was due to the Frisco's entrance into Pensacola, Fla., through the recent purchase of the Muscle Shoals, Birmingham & Pensacola and the construction of a 150-mile connecting line from Aberdeen, Miss., on the Frisco, south to the northern terminus of the Muscle Shoals at Kimbrough, Ala. The terminal has been under construction since February, 1927. The work has included 11 new buildings constructed at a cost of $600,000, 36 miles of tracks, and complete mechanical facilities. The present facilities at Harvard, Ark., and Memphis, Tenn., will be abandoned and all work in that district handled at Yale.

Freight Claim Division at Detroit, June 5

The thirty-seventh annual meeting of the Freight claim division of the American Railway Association will be held at Detroit, Mich., on June 5 to 8. The first session will be opened by addresses by John Large, mayor of Detroit; R. H. Aishton, president of the American Railway Association; R. B. White, president of the Central of New Jersey; and Thomas C. Smith, chairman of the Freight claim division. The afternoon meeting will be devoted to the report of the prevention committee and a general prevention discussion. On the morning of the second day, C. G. Bowker, general manager of the Grand Trunk will speak on the "Relation of the Operating Man to Freight Claim Prevention," after which the committee on loss and damage rules will report.

The afternoon meeting will include an address by Julius H. Parmelee, director of the Bureau of Railway Economics, on the value of statistics in the study of loss and damage problem, the election of officers, the selection of the date and place for the 1929 annual session, an address by T. T. Keliher, chief special agent of the Illinois Central, on "Cooperation of Railway Police in Freight Claim Prevention" and a continuation of the report of the committee on loss and damage rules. Frank Wenter, Jr., general claim agent of the Chicago & North Western, representing the National Safety Council will speak on "Practical Accident Prevention" at the morning session of the third day.

In addition a joint report of the committee on loss and damage rules and the committee on overcharge rules will be considered. At the afternoon meeting, L. G. Macomber, traffic commissioner of the Detroit Board of Commerce will speak on "The Value of Cooperative Work Between Carriers and Commercial Organizations." Reports of the committees on overcharge rules and rules of order will also be considered. On the fourth day there will be a continuation of the consideration of the report of the committee on rules of order and addresses on claim prevention. A special train carrying representatives of the railroads and members of the Chicago Claim Conference will leave Chicago on June 4.

Senate "Requests" Rate Reduction

Shortly after receiving a reply from the Interstate Commerce Commission to the resolution introduced by Senator Walsh, of Montana, inquiring as to the differences between freight rates on grain in the United States and Canada, the Senate on May 25 adopted a resolution proposed by Senator Wheeler, of Montana, requesting the commission to make an investigation "with a view of ascertaining whether rates similar to the Canadian rates on grain, livestock and other agricultural products in the Northwest would be compensatory to American railroads operating in that territory." If upon such investigation rates similar to the Canadian rates are found to be compensatory, the commission is requested to reduce the rates "so that the American farmer will be put on an equality with the Canadian farmer in this respect." The commission is asked to report to the Senate at the beginning of the next regular session.

Oil-Burning Engines on C. R. I. & P.

The Chicago, Rock Island & Pacific plans to substitute oil-burning locomotives for coal-burning locomotives on more than 1,500 miles of lines in Kansas, Texas and Oklahoma, including the entire El Paso-Amarillo division, the conversion to be completed by October 15 for both freight and passenger service. The conversion of this section of the road will give the Rock Island a total of 2,700 miles of lines on which oil will be used instead of coal, or approximately one-third of the entire system. Oil is now used on locomotives on the lines in Arkansas and Louisiana and on the main line between Caldwell, Kan., and Dallas, Tex. To supply the 125 locomotives used in the territory where the conversion will take place, the company will erect roadside oil stations at Herington, Kan., Hutchinson, Pratt, Liberal and Bucklin; Dalhart, Tex., McLean and Amarillo; Sayre, Okla., Clinton Junction, Geary and Ingersoll; and Tucumari, N. M. A contract has been made with the Phillips Petroleum Company for the necessary fuel oil.

Stay of Fruit Rate Order Denied

The Supreme Court of the United States on May 28 denied a motion filed by the railroads for a stay or suspension of the order of the Interstate Commerce Commission reducing rates on deciduous fruits from California under the Hoch-Smith resolution pending the appeal to the Supreme Court from a decision of the lower federal court which had refused to enjoin the commission's order. The carriers had asked that the order be stayed on the ground that "doubtful, grave and novel questions of law are brought before this court for the first time for decision and that unless the order is stayed the carriers will be subjected to irreparable injury to the extent of approximately $3,000,000 during the coming eight months." They also offered to repay to the shippers the difference in rates should the court finally uphold the commission's order.

First Tests Made on New Master Railroad Track Scale

Two reports covering the first tests made on the master railroad track scale of the Bureau of Standards installed at Clearing Yard, near Chicago, have been sent to M. J. J. Harrison, general scale inspector of the Western region of the Pennsylvania.

These reports cover test weight cars Nos. 490385 and 999087, and show that when the cars left the new test depot they were within 0.10 pounds and 3.10 pounds respectively of true weight, although the first has a total nominal weight of 40,000 and the second 80,000 pounds.

The new master scale depot has just been completed by the Bureau of Standards on a site given by the railroads to the United States government. It houses the Bureau's master track scale, with a capacity of 150,000 pounds and so sensitive that it will show differences of 1/10 pound.

The scale will be used to weigh test cars, similar to the two which have just been reported upon and will also be used to check up the railroad track scale testing equipment of the Bureau of Standards. The bureau itself owns four test cars, two of which are of the ordinary type, while two are of unusual design for high precision work, and are used to test only master scales against which various railroads check their own test cars.

The Bureau's master scale will also be used to check up the railroad test cars if desired, as in the case of the two reports just issued. It will also be used for heavy weights such as are used by steel mills, etc.

P. & S. Officers Pick Contest Winners

Three men, James M. Day, foreman of stores, Southern Pacific, West Oakland, Cal., C. E. Oeschger, chief clerk of stores, Chicago, Milwaukee, St. Paul & Pacific, Austin, Minn., and J. R. Stokes, assistant division storekeeper, Illinois Central, Chicago, were judged the winners of a contest held during the year by Division VI, Purchases and Stores, A. R. A., for the best paper on railway supply work by junior officers and employees in purchasing and stores departments. Mr. Day was one of the winners in a similar contest held in 1927. As a reward for their success the three authors, among whom the honors are divided equally, will be sent to Atlantic City, N. J., to read their papers before the annual convention. At that time abstracts of their papers will be presented in the daily editions of *Railway Age*.

Honorable mention was also awarded the papers written by: George W. Lieber, superintendent reclamation, Missouri-Kansas-Texas, Parsons, Kan.; Dana D. Phillips, clerk purchasing department, Boston & Maine, Boston, Mass.; L. E. Baker, assistant general foreman, Lehigh Valley, Sayre, Pa.; Clyde L. Wakeman, chief clerk to general storekeeper, Union Pacific, Omaha, Neb.; and H. F. Burnett, general foreman, Kansas City Southern, Pittsburgh, Kan.; the latter, one of the winners of the 1927 contest.

The contest is the second one held by Division VI, and was launched to stimulate the interest of the younger men in the problems of the purchases and stores departments. It was open to all officers and employees in these departments below the rank of assistant general purchasing agent and assistant general storekeeper, and has proved highly successful in both years, judging both from the number and merit of the papers presented.

The C. N. R. in April

An increase in net earnings and a decrease in the operating ratio of the Canadian National are shown in the sum-

mary of earnings and expenses for the four-month period since the beginning of 1928.

During April the gross earnings of the system amounted to $19,811,399 as compared with $18,913,095 in April, 1927, an increase of $898,303, equivalent to 4.75 per cent.

The net earnings in April totaled $2,884,286 as against $2,737,262 in April of last year, an increase in favor of April this year amounting to $147,023, or 5.37 per cent. The ratio of operating expenses to gross earnings was 85.44 per cent as compared with 85.53 per cent in April, 1927.

For the four month period from January 1 last the gross earnings amounted to $79,429,422, and in the similar four month period of 1927 the gross earnings totaled $73,907,725, an increase during the current year of $5,521,696, or 7.47 per cent.

During the four month period of 1928 the operating expenses totaled $66,021,141, which compare with $62,894,743 for the similar period of 1927, an increase of 4.97 per cent amounting to $3,126,398.

The net earnings for the first four months of the current year thus amounted to $13,408,280 in comparison with $11,012,981 during that period of 1927, an increase of $2,395,298 equivalent to 21.75 per cent.

The operating ratio for the first four months of 1928 was 83.12 as compared with 85.10 per cent in the first four months of 1927.

Rock Island Reunion

The Twenty-Five Year club of the Chicago, Rock Island & Pacific held its third annual reunion at the Palmer House, Chicago, on May 25 when 630 employees who have spent more than 25 years in the service of that railroad and are still in active service, and their families and friends gathered for a banquet. Included among those at the reunion were 12 men who have been in service for more than 50 years and two women whose service is of more than 25 years. James E. Gorman, president of the road, sketched its progress in past years, noting the importance of its entry into the oil fields and attributing its present success to the loyalty of its employees. J. W. Lawhead, president of the club, presided at the banquet.

Other speakers included L. C. Fritch, vice-president; W. H. Thomas, conductor, Topeka, Kan.; Carl Nyquist, vice-president; Mrs. W. A. O'Neill, a conductor's wife, Iowa Falls, Iowa, and W. P. Williams, claim agent, Ft. Worth, Tex.

World Engineering Congress in Tokio, Japan, in 1929

The Kogakkai (Engineering Society of Japan) has announced a World Engineering Congress to be held at Tokio, Japan, for two weeks, toward the end of October, 1929. Baron K. Furuichi, president of the Kogakkai, has extended an invitation to governmental departments, universities, institutes, associations and individuals engaged in engineering in all countries of the world, to attend this congress.

The congress proposes to discuss various engineering subjects in anticipation of eventually initiating and promoting international co-operation in the study of engineering science and problems.

Baron Furuichi's invitation has been accepted by the engineering societies and a number of other organizations in this country. An American committee, of which Herbert Hoover is honorary chairman and Elmer A. Sperry chairman, has been appointed to arrange the American portion of the technical program, and transportation and entertainment for delegates and guests attending the congress. Maurice Holland, 29 West Thirty-ninth street, New York, has been appointed executive secretary.

The following is the tentative program which has been planned for the congress:

General problems concerning engineering:
Education, administration, management, statistics, standardization, international co-operation of engineers, etc.
Engineering science:
Strength of materials, thermodynamics, and other scientific researches.
Public works:
Railways, highways, harbor engineering, river engineering, canals, municipal engineering.
Communication and transportation:
Ocean and inland navigation, aerial navigation, telegraph, telephone, etc.
Power:
Resources, production and distribution.
Architecture and structural engineering.
Mechanical and electrical engineering.
Chemical industry.
Textile industry.
Shipbuilding and marine engineering.
Aeronautical and automotive engineering, road vehicles.
Mining and metallurgy.
Engineering materials.
Fuel (solid, liquid and gaseous) and combustion engineering.
Water works, drainage, heating and ventilation, illumination, refrigeration.
Scientific management.
Miscellaneous.

Supply Officers Ready for Annual Meeting

Preparations are now practically complete for the annual meeting of Division VI, Purchases and Stores, A. R. A., which will be held in Haddon Hall, Atlantic City, N. J., on June 20, 21 and 22, under the direction of Chairman A. S. McKelligon, general storekeeper, Southern Pacific, Pacific Lines, Vice-Chairman C. C. Kyle, purchasing agent, Northern Pacific, and W. J. Farrell, secretary. The program of the meeting follows:

CONVENTION PROGRAM

Wednesday, June 20

9 a.m. to 1:30 p.m., Daylight Saving Time

Meeting called to order.
Address by J. H. Waterman, retired superintendent timber preservation, C., B. & Q.
Address by R. H. Aishton, president, American Railway Association.
Address by W. G. Besler, first vice-president, American Railway Association.
Address by Chairman A. S. McKelligon.
Report of General Committee.
Report on Stores Department Book of Rules.
Report on Classification of Material.
Address by L. R. Powell, Jr., president, Seaboard Air Line.
Report on Provisions for Uniform Observance of General Balance Sheet Account 716 Material and Supplies, and Recommendations Governing Charges to Material Store Expenses, Paragraph 16—Special Instructions Operating Expenses.
Paper on Terminal Storekeeping by E. H. Polk, district storekeeper, Southern Pacific.
Report on Forest Products.
Report on Control of Material and Supplies Requirements.
Report on Stores Department Buildings and Facilities for Handling Material.

Thursday, June 21, 1928

9 a.m. to 1:30 p.m., Daylight Saving Time

Paper on Inspection of Materials and Supplies, Other Than Covered by Specifications, by J. P. Kavanaugh, general storekeeper, Chesapeake & Ohio.
Address by J. Marshall, Freight Claim Division, A. R. A.
Report on Purchasing Agent's Office Records and Office Organization, Including Price Index of Railroad Commodities.
Presentation of Winning Papers of Annual Essay Contest.
Report on Standardization and Simplification of Stores Stocks and Disposition of Surplus or Inactive Materials.
Paper on The Manufacture of Concrete Products by I. G. Morrison, storekeeper, C., B. & Q.
Report on Fundamental Plan of Organization for Material and Supplies.
Report on Control of Line Stocks.
Report on Recovery, Repair and Reclamation of Discarded Material—Classification, Handling and Sale of Scrap. (Illustrated by stereopticon views.)
Report on Stationery and Printing.
Report on Delivery of Material to Users. (Illustrated by motion pictures and stereopticon views.)

Friday, June 22, 1928

9 a.m. to 1:30 p.m., Daylight Saving Time

Paper—A Dollar Carefully Expended, by William W. Morris, assistant general purchasing agent, Pennsylvania.
Report on Control of Shop Manufacturing Orders for Stock Material.
Report on Unit Pricing of Materials and Unit Piling.
Report on Fire Prevention.
Report on Stores Department Safety Practices.
Paper on Consignment Stocks, Advantages and Limitations.
Report on Uniform Methods Pertaining to Purchases of Equipment and Large Material Contracts, and Vital Statistics Relating to Purchases.
Report of Joint Committee on Metric System.
Report of Joint Committee on Fuel Conservation.
Report on Workable Rules in Connection with the Carrying Out of the Provisions of Section 10 of the Clayton Anti-Trust Act.
Closing business.

Upholds Arbitrators' Decision in Western Firemen's Wage Case

The United States Circuit Court of Appeals at Chicago handed down a decision on May 24, upholding the award of four arbitrators who on December 17 had granted firemen and hostlers on Western railroads a wage increase varying from 30 to 35 cents a day.

The judges of the court of appeals, District Judge Geiger and Circuit Judges Evans and Page, upheld the order of the federal district court of February 1, which dismissed the petition filed by the railroads to impeach the award of the arbitration board. The judges found, on the two major questions involved in the appeal, that under the Railroad Labor Act the power of the arbitration board to make an award did not terminate until the expiration of the time fixed by the original agreement between the two parties—December 20. They further held that it was obvious that the mere announcement of a disagreement, final or otherwise, could not be correctly termed a "decision" of the controversy. Formal agreement to disagree, the opinion declares, no matter how accurately or comprehensively stated, would be a decision to terminate the proceedings, but it could not be a decision of an issue.

The judges found that all proceedings in the arbitration were conducted in conformity with the Railroad Labor Act, that the award confines itself to the stipulation of the agreement to arbitrate and that there was no fraud or corruption on the part of the members of the board.

Hearings on the request by the Brotherhood of Locomotive Firemen and Enginemen for an increase in the rates of

pay for firemen, helpers, hostlers and hostler helpers of $1 per day and various changes in the classification weights on locomotive drivers, were begun at Chicago on September 30, 1927, and were concluded on November 11. On November 28, the board of arbitration, consisting of six members, met at Denver, Colo., and agreed to extend the time within which a final decision in the proceedings was to be reached, to December 20. They continued their session at Denver from November 28 until December 5 and on that date reached the unanimous decision that they found themselves unable to agree on the question before them. They also stated that as the majority had failed to reach an agreement on the main case it was their unanimous opinion that no award should be made on the minor cases. This agreement to disagree was filed in the district court at Chicago on December 7.

Following correspondence with the United States Board of Mediation at Washington the neutral and labor arbitrators again met at Denver on December 17, the two railroad representatives having taken the position that the agreement of December 5 constituted a decision and that the work of the arbitration board had been finished. These four members of the board then granted an increase in rates of pay for firemen in road passenger service of 30 cents a day and of 35 cents a day for all other employees involved in the proceedings. The board denied a demand which provides for an additional 25 cents in pay per day over and above any increase which might be given on the main demand. On December 23 the railroads filed in the district court a petition to impeach what they termed "the pretended award" and on January 3 the Brotherhood filed a motion to dismiss the petition to impeach the award. The district court entered an order on February 1 sustaining the motion to dismiss the petition to impeach the award, which decision the Circuit Court of Appeals has now upheld.

J. M. Davis Favors Grade Crossing Consolidation

"An unbelievably large sum of money could be saved the taxpayers of the nation," said J. M. Davis, president of the Delaware, Lackawanna & Western, in a statement made public on May 31, and the number of killed and maimed motorists could be materially lessened if the local authorities of the interested communities would effectively co-operate with the railroads in reducing the number of present and restricting the creation of new highway grade crossings, through the construction of highways paralleling the railroads and the consolidation of several crossings into one.

"Since 1910 the Lackawanna has spent more than $29,000,000 in eliminating grade crossings," said Mr. Davis, "and yet, notwithstanding this tremendous non-revenue-producing expenditure — on the part of the railroad alone—which expenditure does not earn its keep and on which we have to pay taxes, only 36 per cent of the public highway grade crossings on its lines in the states of New Jersey, Pennsylvania and New York have been done away with.

"There are about 233,000 railroad highway crossings in this country," continued Mr. Davis. "To separate all of them, either by over or under passageways, would require generations of time to accomplish and involve an expenditure of something like $19,000,000,000. In the days of the horse and buggy, frequent crossings saved distance and much time, but in these days of fast-moving autos and trucks the time element has been cut down to almost nothing and the way opened for the construction of so-called marginal or parallel highways and doing away with countless unnecessary and expensive crossings, without detriment to traffic, and the saving of their cost as well as the lives that might be snuffed out at these points. As the expense of grade-crossing-elimination work generally is shared between the state, county or municipality and railroad, the enormous saving which thus would be brought about would be saved to the taxpayers.

"The Lackawanna," continued Mr. Davis, "will gladly co-operate with any community along its lines in the construction of marginal highways to lessen the number of grade crossings, injuries and deaths and save money for the taxpayers, of which it is a large one."

Ask Bids on Operation of Inland Terminal in N. Y.

The Port of New York Authority has announced its plans to receive bids for the operation of an inland universal freight station on Manhattan island, the first of the series which is proposed under its comprehensive plan for New York. Advertisements for these bids on the operation of the proposed facility will appear in the newspaper issues of June 4. No bids for construction are to be invited at this time. In the announcement of its plan the Port Authority states that it has made a study of universal freight stations in the last few years and holds that, with the establishment of such terminals available to all carriers, both street and waterfront congestions would be greatly lessened as would freight distribution and collection costs.

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, 165 Broadway, New York City. Exhibit by Air Brake Apliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred Venton, Crane Company, 836 So. Michigan B'lv'd., Chicago. Meets with air break association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 liberty St., New York. Annual meeting, October, Hotel Broadmoor, Colorado, Springs, Colo.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Anual convention, June 12-15, 1928, Hotel Peabody, Memphis, Tenn.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—L. M. Jones, Supt. of Sleeping and Dining Cars, C. M. St., P., Chicago. Annual meeting, October, 1928, Havana, Cuba.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York. Annual convention, Sept. 22-28, Cleveland Public Auditorium, Cleveland, Ohio.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITH'S AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago.

AMERICAN RAILWAY ASSOCIATION.—H. J. Foster 30 Vesey St., New York, N. Y.

Division 1.—Operating—J. C. Caviston, 30 Vesey St., New York.

Freight Station Section (including former activities of American Association of Freight Agents)—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago. Next meeting, June 19-22, Niagara Falls, N. Y.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association)—J. C. Caviston, 30 Vesey St., New York. Next meeting, June 19-21, Hotel Statler, St. Louis.

Safety Section.—J. C. Caviston, 30 Vesey St., New York.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents)—W. A. Fairbanks, 30 Vesey St., New York. Next meeting, Sept. 18-20, 1928, St. Francis Hotel, San Francisco.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn, St., Chicago.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.— Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual convention, March 5-7, 1929, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electrical Section—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association)—H. S. Balliet, 30 Vesey St., New York.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 20-27, 1928, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (Including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next meeting, Sept. 11-13, Windsor Hotel, Montreal.

Division VI.—Purchase and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting, June 20-22, Atlantic City, N. J.

Division VII.—Freight Claims (including former activities of the Freight Claims Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 5-8, 1928, Book-Cadillac Hotel, Detroit, Mich.

Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

Motor Transport Division.—George M. Campbell, American Railway Association, 30 Vesey St., N. Y. C. Next meeting, June 21-23, Rose Room, Hotel Traymore, Atlantic City, N. J.

AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, Oct. 23-25, 1928, Statler Hotel, Boston. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—R. G. East, Agricultural Agent, Pennsylvania Railroad, Shelbyville, Ind.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Annual convention, March 5-7, 1929, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—Miss Page Nelson Price, Norfolk & Western Magazine, Roanoke, Va.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, Sept. 12-14, 1928, Hotel Sherman Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: E. H. Lunde, Federal Machinery Sales Co., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

THE AMERICAN SOCIETY FOR TESTING MATERIALS.—Annual meeting at the Chalfonte-Haddon Hall, Atlantic City, June 25-29, 1928.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 228 N. La Salle St., Chicago. Annual meeting, January 22, 1929, Louisville, Ky.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting June 20-22, 1928, Omaha, Neb.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Semi-annual meeting, June 21, Atlantic City, N. J. Annual convention, Oct. 23-26, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. F. Weil, American Brake Shoe & Fdy. Co., 332 So. Michigan Ave., Chicago. Meets with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. D. Waugh, Detroit Graphite Co., St. Louis, Mo. Annual exhibit at convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Brause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—A. J. Walsh, 5874 Plymouth, Apt. 18, St. Louis, Mo. Meetings, first Tuesday of each month, except July and August, Broadview Hotel, East St. Louis, Ill.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTOR'S AND CAR FOREMEN'S ASSOCIATION.—(See Railway Car Department Officers' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R. Detroit, Mich. Annual convention, August 21-22, 1928, Hotel Sherman, Chicago. Exhibit by International Railroad Master Blacksmith's Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—W. W. Criley, Ajax Mfg. Co., Cleveland, O.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—L. G. Plant, 80 E. Jackson Blvd., Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Annual convention, September 18-21, 1928, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—S. A. Witt, Detroit Lubricator Co., 820 So. Michigan, Blvd., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKER'S ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy M. Edmonds, St. Louis, Mo.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual convention, November 13, New Orleans, La.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section; C. F. Larson, supt. of safety, Missouri Pacific, St. Louis, Mo. Annual congress, Oct. 1, New York.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November, 1928, Hotel Commodore, New York.

RAILWAY CAR DEPARTMENT OFFICER'S ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Supply Men's Association.—B. S. Johnson, W. H. Miner, Inc., 209 S. LaSalle St., Chicago.

RAILWAY CLUB OF PITTSBURG.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURER'S ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next convention, Oct. 9-11, 1928.

RAILWAY SUPPLY MANUFACTURER'S ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association, June 20-27.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, October 11-13, Atlanta-Biltmore Hotel, Atlanta, Ga.

ROADMASTER'S AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahue, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual convention, September 18-20, 1928, Book-Cadillac Hotel, Detroit, Mich. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Rrauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMENS INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box. 1205 Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta. Ga.

TRACK SUPPLY ASSOCIATION.—A. H. Todd, Positive Rail Anchor Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Annual convention. September 25-28, 1928, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

The T. H. & B. Car Ferry, "Maitland No. 1," Rides High in the Ice on Lake Erie

Traffic

The Interstate Commission has further postponed until August 10 the effective date of its order of November 8 in the Southeastern Sugar Investigation case.

The Fort Worth & Denver City plans to establish passenger and freight service on August 1, over its new South Plains extension from Estelline, Tex., to Lubbock.

The Manhattan Limited, 21-hour express train of the Pennsylvania Railroad, between New York and Chicago, has completed its 25th year, having been put in service on May 24, 1903; and the date was celebrated by mammoth birthday cakes in the dining cars.

The Atchison, Topeka & Santa Fe "Chief," which operates between Chicago and Los Angeles, Cal., has completed 98.13 per cent of its trips on time since it was established on November 14, 1926. During this period it has covered 2,397,434 miles, equivalent to 96 times around the earth at the equator.

A survey of cargo available for barge transportation at every city and town on the Ohio and Mississippi rivers, between Pittsburgh and New Orleans, is to be undertaken by the Transportation Division of the Department of Commerce. The work will start shortly at Pittsburgh and is expected to be completed in about six weeks.

The Long Island's summer train service to and from New York City is to be maintained and in various directions somewhat improved, notwithstanding the fact that the extension of the New York city "subway"—an elevated structure—to Flushing, L. I., which was opened last January, has diverted from the Long Island road about fifteen or twenty thousand passengers a day. Flushing is about eight miles from the Pennsylvania station, Manhattan. All trains will be made up of steel cars, and the roadbed is being oiled.

Effective June 1, the mileage now comprising the East Carolina and Alabama divisions of the Seaboard Air Line will be assigned to the South Carolina division. Headquarters of the South Carolina division will be at Savannah, Ga. The South Carolina division will be assigned to the Northern general district. That mileage of the South Carolina division extending from Jacksonville to River Junction and Bainbridge, including branches, and Jacksonville and Baldwin terminals, will be assigned to the North Florida division. Headquarters of the North Florida division will be at Jacksonville, Fla.

A motion on behalf of the railroads asking the Supreme Court of the United States to issue a stay order to prevent the taking effect of the Interstate Commerce Commission's order reducing the

rates on California deciduous fruits under the Hoch-Smith resolution, pending an appeal to the Supreme Court from the decision of the lower federal court which had declined to enjoin the commission's order, was argued before the court on May 21. On behalf of the railroads it was urged that the commission's order was unconstitutional and that they would be greatly damaged if the rates were to be reduced during this year's season pending the appeal. Blackburn Esterline, on behalf of the government, opposed the motion for a stay, contending that the record in the case has been delayed by the carriers.

The Chicago, Rock Island & Pacific, in conjunction with the re-arrangement of passenger schedules to afford faster time between eastern terminals and Colorado points, has reduced the running time of its Colorado Express, eastbound, one hour and twenty minutes. The train after June 3, will leave Denver at 11:20 p.m., instead of 10:00 p.m. and will arrive in Chicago at 6:59 a.m. as before. The Memphis Californian will leave Memphis at 10:20 p.m. instead of 9:05 p.m. and will arrive in Tucumcari at 3:10 a.m. instead of 3:00 a.m. Returning it will leave Tucumcari at 10:55 p.m. instead of 11:15 and will arrive in Memphis at 6:40 a.m. as previously. A new train will be placed in service between Little Rock, Ark., and Alexandria, La. leaving Little Rock at 8:50 a.m. and arriving at Alexandria at 7 p.m. The Rocky Mountain Limited will leave Chicago at 10:30 a.m. instead of 10:00 a.m. and will arrive in Denver at 1:10 p.m. as before.

An investigation has been ordered by the Interstate Commerce Commission of the charges of all common carriers subject to the interstate commerce act applicable to the protection against heat or cold of perishable freight, such as fruits, vegetables, berries and melons, from and to all points of origin and destination in continental United States except from points of origin in Florida, Georgia, South Carolina, North Carolina, and Virginia to points in Official Classification territory as covered by the order of investigation in docket No. 17,936. In addition to the railroads the American Refrigerator Transit Company, Burlington Refrigerator Transit Company, Merchants Despatch, Incorporated, Union Refrigerator Transit Company, Western Fruit Express Company and Fruit Growers' Express Company are made respondents. The order supersedes one issued on March 12.

Heavy Travel From California

Passenger travel from California to Chicago on May 22, 23 and 24, the first three days on which the low rate summer excursion fares were in effect, exceeded that of the same period in any previous year. The Chicago, Milwaukee, St. Paul & Pacific operated its Pacific Limited in two sections and in addition ran three specials. Of the latter, two carried tourists enroute to Germany and one a party traveling to Denmark. Traffic on the Chicago & North Western required 15 extra trains, in addition to 50 extra sleeping cars on regular trains. The Atchison, Topeka & Santa Fe transported 5,000 people on 48 special trains during the first five days.

Fast Freight to California

On May 16, the Atchison, Topeka & Santa Fe, the Chicago & North Western in conjunction with the Union Pacific, the Chicago, Milwaukee, St. Paul & Pacific in conjunction with the Union Pacific and the Chicago, Rock Island & Pacific in conjunction with the Southern Pacific, established 175-hr. freight service between Chicago and Los Angeles, Cal., and San Francisco, which is a reduction of 24 hours from the old schedule. Besides giving eighth morning delivery from Chicago to Los Angeles the new schedule will make possible eleventh morning delivery from New York.

Freight Traffic in March

The volume of freight traffic moved by the Class I railroads in the first three months of 1928 amounted to 111,435,536,000 net ton-miles, according to a compilation by the Bureau of Railway Economics. This was a decrease of 6,862,674,000 net ton-miles, or 5.8 per cent below that of the corresponding period last year. The Eastern district for the three months showed a decrease of 11.2 per cent, the Southern a decrease of 7 per cent, and the Western an increase of 3.1 per cent.

In March the total was 39,467,405,000 net ton miles, a decrease of 2,349,501,000 or 5.6 per cent, below that of March, 1927; Eastern district, decrease 12.1 per cent, Southern district 4.8 per cent, and Western district an increase of 4.1 per cent.

The average daily movement per freight car in March was 31 miles. This was the highest average for any March on record and an increase of one-tenth of a mile above the same month in 1927 as well as an increase of 1.8 miles above that for March 1926. The average load per car in March was 26.1 tons; a decrease of 1.3 tons under that of the same month last year and three-tenths of a ton below March, 1926.

Derby Day Traffic Is Large

A total of 35 special and regular trains carrying over 5,500 people to attend the Kentucky Derby on May 19 were operated by the Pennsylvania, the Chicago, Indianapolis & Louisville, the Cleveland, Cincinnati, Chicago & St. Louis, and the Chicago & Eastern Illinois from Chicago to Louisville, Ky., on May 17 and 18. The movement this year embraced a marked departure from previous years in that a number of people traveled by airplane. The largest airplane party was made up of 12 guests from the Edgewater Beach Hotel. Much of the rail traffic started to move as much as a week in advance. Some of the railroads experienced an increase in passenger movements to intermediate points as early as May 13.

The Pennsylvania handled this traffic in 20 trains, including 12 specials from Chicago, two trains, including one private car train, from New York, one from Detroit and one from Pittsburgh. Of the 12 special trains from Chicago five were chartered by members of clubs in Chicago.

The Monon operated a total of 12 trains of which 10 were specials. The Big Four operated 2 special trains and the Chicago & Eastern Illinois in conjunction with the Southern, one train.

Accurate Estimates by Advisory Board

The accuracy of estimates of the car requirements of traffic for future periods made by regional advisory boards is indicated in a comparison of the actual freight car-loadings in the territory of the Midwest Shippers' Advisory Board in the last quarter of 1927, with the advance estimate as to the probable loadings. At the meeting held in Decatur, Ill., on October 12, 1927, the aggregate of the estimates of the various commodity committees of the Board for the last three months of 1927, indicated that 1,129,649 freight cars would be required for the loading of specified commodities. The actual carloadings of these commodities in this territory in these three months amounted to 1,128,728, only 921 cars, or 0.08 per cent more than the specified amount.

Striking instances of accuracy were shown by the reports of many of the commodity committees. Grain loadings, for example, were anticipated as 78,000 cars, while the actual loadings were 78,095 cars. Loadings of hay, straw and alfalfa were estimated at 12,000 cars, the actual loadings being 11,893 cars. Loadings of cement were estimated at 19,000 cars, while the actual loadings show 19,323 cars; canned goods estimated at 12,000 cars turned out to be 11,953 cars.

* * *

Photo H. F. O'Neil

Hellgate Canyon, Near Missoula, Mont.

Foreign

Third Class Sleeping Accommodation in England

The London, Midland & Scottish, the London & North Eastern and the Great Western propose to provide sleeping accommodations for third-class passengers experimentally, according to reports to the United States Department of Commerce. The railway companies at present are not prepared to say more than that designs and estimates have been prepared to adapt a number of third-class corridor cars and to put these in service shortly. No decision has yet been announced as to the rates to be charged for the new accommodation. The present charge on the Great Western for a berth is about $3.50; on the London, Midland & Scottish and the London & North Eastern the charge is about $5.00 extra between London and Scottish stations and about $3.50 to stations south of the border.

The adaptation of cars to meet the demand for third-class sleepers will help to remove weight behind the engine. A first-class sleeping car is heavily weighted to make it run smoothly, the weight with a full car averaging over three tons per passenger. The ordinary weight per passenger is about 1,200 lb. The adaptation of third-class compartments will, however, cut down the accommodation of those compartments by one-half, and if this necessitates the use of additional cars and an extra locomotive, or dividing some of the long haul trains into two sections, it is feared that it will result in a loss to the companies.

Lord Dalziel Dies

Lord Dalziel of Wooler, chairman and managing director of the Pullman Car Company, Ltd., (England), and chairman of the board of directors of the managing committee of the International Sleeping Car Company, died on April 18, at his home in London, Eng. Lord Dalziel was identified with the rapid development of luxury travel in England during the past twenty years and in this connection was responsible for the introduction of the "Southern Belle" the first British parlor car train which commenced running between London and Brighton in 1908. Post war developments in the International Sleeping Car Company service following his assumption of control in 1919 include the celebrated "Blue Trains" between Calais and the Riviera, and other famous Pullman (parlor car) car services traversing the continent.

Dividends of Private Railways

Complete control over income from properties exempted from the guaranteed minimum four per cent dividend and from the play of the bonus provisions in the Act of 1921 enabled all five private railway companies of France to maintain dividends equal to those of last year, despite declines in traffic.

Dividends declared by the different companies on the two types of shares are as follows:

	Actions de capital (Francs)	Actions de jouissance (Francs)
P. L. M.	75	55
Eastern	50	30
Northern	90	74
Orleans	65	50
Southern	60	35

Shares are quoted at little more than before the war while the gross yield on ordinary shares (actions de capital) ranges from four per cent in the case of the Northern to five per cent in that of the Orleans.

Operating results for the year indicated a surplus totalling 143 million francs to be paid into the common fund by the P. L. M., Eastern and Northern as against a deficit of 158 million francs to be withdrawn, 84 million by the Orleans and 74 million by the Southern. Last year the former three paid in a total surplus of 669 million francs while the Orleans withdrew 106 million and the Southern 9 million.

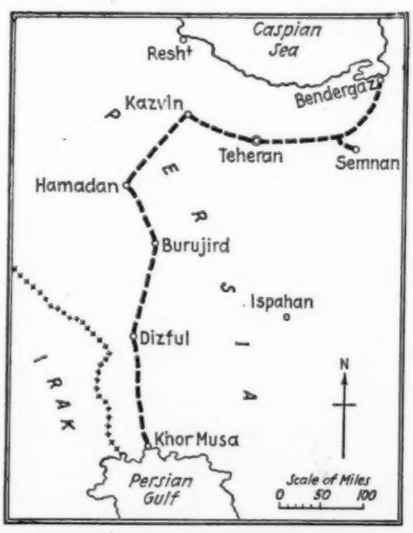
Persia to Have 1300-Mile Line

The construction of a 1,300-mile railroad in Persia to cost nearly $20,000,000 has been approved by the Persian government and contracts for the building of the road have been awarded to a group of companies composed of Ulen & Co., of New York, the J. G. White Engineering Company of New York, Julius Berger Tufbau A. G. of Berlin, Phillippe Holtzman A. G. of Frankfort, Siemans-Ban Union G. M. B. H. of Berlin, Stewart & McDonnell of London and Batignolles Company of Paris.

The railway will start from Khormusa on the Persian gulf and pass through Dizful, Burujird, Hamadan, Kazvin, and so to Teheran; then through Semnan to Bendergaz on the Caspian sea. The survey is nearly complete and the route settled except for a part of the way between Teheran and Bendergaz. The survey shows the route running northeast of Semnan to be the more practicable. This would necessitate a branch line to Semnan where there is said to be enough iron ore to warrant the construction of a foundry. It is at Semnan also that the drilling has begun in the new Persian oil field. Surveys are therefore being made to see if the main line can cross the Elburz range at Semnan. It appears possible to make Khormusa, at the southern terminus, an ideal port. There is a bar at the mouth of the estuary, but it is narrow and requires little dredging to allow the passage of the largest vessels navigating the Indian Ocean. From the bar there is a deep-water channel right to the quayside. It is possible also that the Anglo-Persian Oil Company will bring a pipe line to Khormusa, not only as a source of supply of crude oil for consumption on the railway, which will utilize oil-burning engines, but also for export.

From Khormusa to Dizful construction work will not be difficult, but from Dizful to Burujird and Hamadan there is a gradual ascent until Hamadan and Kazvin the line will cross the Aveh pass (7,380 ft.) and then descend to the plateau of Kazvin-Teheran-Kishlak. From Kishlak there is a gradual rise again to the Firuzkuh pass (7,380 ft.). The line will then drop sharply down to the level of the Caspian sea.

The route planned is shown on the accompanying map. Alternate routes were considered, for instance, one that was considerably shorter and ran from Hamadan to Resht, but that did not touch Teheran, capital of Persia. Another route called for turning east at Dizful to Ispahan, an important trading center, but this involved an 8,000 ft. pass in the mountains.



Map of the Proposed Trans-Persian Railroad

Persia with an area of 628,000 sq. miles and a population estimated at 12,000,000, has in existence only 150 miles of railroads which are not made of connecting lines. Earlier attempts to gain concessions from the Persian government for construction of needed railroad facilities have been made, but until the present award of contracts to a group of international engineers, nothing had been done.

Here and There Abroad

Foreign railroad news items, as reported to the United States Department of Commerce follow:

Gross receipts of railroads in Mexico during 1927 amounted to about $80,565,440. Of the total $60,941,700 were for the National Railways of Mexico; $6,341,298 for the Mexican Railway, and $5,256,414 for the Southern Pacific of Mexico. The 10 per cent tax which the government collects on gross receipts amounted to about $8,056,515.

The Czechoslovak State Railways have announced a reduction in freight rates on shipments of iron ore from Hnusta-Likier, or Roznava, to Oderburg, Cesky Tesin, or the Skalica frontier. Shipments must be destined for foreign stations and the minimum annual quantity shall amount to 20,000 tons. The State Railways are also granting a 10 per cent reduction in

freight rates on hollow glassware, if it is shipped from Teplice-Waldthor to Rosawitz, Laube, Aussig and Schoenpriesen.

The South African Railway Administration, during the past four years has been using an increasing number of steel cross ties, their use having been found more economical than wooden ties on light branch lines and on certain sections of the main system. Although it is not contemplated to utilize steel ties exclusively, the Administration favors their use wherever possible. Purchases of steel ties for the period 1924-27 amounted to about $114,968. Orders were allocated as follows: Germany 1924, $16,803; 1925, $3,751; 1926, $8,255; 1927, $54,188; France, 1924, $8,175; 1925, $6,272; 1926, $13,694; 1927, none; Belgium, 1926, $3,829.

The result of reduced freight rates on the Finnish State Railways from December 1, 1927 until March 31, 1928 was considered satisfactory. In January and February a large amount of goods was transported, which, had not the reduced rates been in force, would have been shipped during the spring when traffic is ordinarily heavy. In view of the results obtained, the railroad department is preparing a proposal regarding a freight rates rebate system for the coming winter season. The rebate concerns planed and sawn lumber, produce, fertilizer, animal fodder, brick, cement and lime, which are shipped in quantities of no less than 9 tons per car.

A new cash on delivery railway service in Scotland, similar to the "value payable" service which has been in operation in India for many years, is to be adopted. The shipper will be required, following shipment, to forward to the consignee a letter C.O.D. enclosing a document to entitle the latter to take delivery of the goods. The letter will be delivered by the Post Office on payment of the C.O.D. fee representing the amount due by the consignee to the shipper, and the money will at once be remitted to the latter. The shipment will be delivered on surrender of the document to the railroad. The maximum amount collected on any package will be about $185.00 and the railroad will charge a special fee of 6 cents in addition to the ordinary rates on every consignment which does not exceed $185.00 in value, irrespective of the number of packages.

* * *

New Monongahela Terminal Building at Brownsville, Pa.

Equipment and Supplies

Freight Cars

THE BROWN COMPANY, Berlin, N. H., has ordered 1 glass lined tank car of 5,000 gal. capacity, from the General American Tank Car Corporation.

THE GUAYAQUIL & QUITO, Ecuador, has ordered 50 box cars of 22½ tons' capacity from the American Car & Foundry Company.

THE AMERICAN OIL COMPANY, Baltimore, Md., has ordered 2 three-compartment tank cars of 6,000 gal. capacity, from the General American Tank Car Corporation.

THE SOUTHERN COTTON OIL COMPANY, Savannah, Ga., has ordered 10 tank cars of 8,000 gal. capacity from the American Car & Foundry Co., and 10 tank cars from the General American Tank Car Corportion. Inquiry for this equipment was reported in the *Railway Age* of April 28.

Passenger Cars

THE COLUMBUS & GREENVILLE has ordered two 73-ft., gas-electric rail motor cars and two 73-ft. passenger trailer cars with observation ends from the J. G. Brill Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 5 steel horse-express cars from the American Car & Foundry Co. Inquiry for this equipment was reported in the *Railway Age* of April 28.

THE SOUTHERN PACIFIC has ordered 6 dining cars and 5 compartment coaches from the Pullman Car & Manufacturing Corporation; 10 baggage cars from the Standard Steel Car Company; 25 steel coaches 73 ft. 6 in. long from the American Car & Foundry Co.; 6 baggage and mail cars from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of April 21

THE NORTHERN PACIFIC.—Three of the rail motor cars recently ordered by this company and reported in the *Railway Age* of May 19, will be equipped with Electro-Motive Company's power plants; two of the cars with 300 hp. power plants, and one with 275 hp. power plant.

Iron and Steel

THE MISSOURI PACIFIC is inquiring for 3,000 tons of structural steel for a bridge at Little Rock, Ark.

THE PENNSYLVANIA has ordered 400 tons of steel for bridges, from the American Bridge Company, and is inquiring for 100 tons of steel.

Machinery and Tools

THE CHESAPEAKE & OHIO is inquiring for a 42-in. cold saw.

THE SOUTHERN is inquiring for a 16-in. lathe.

THE BOSTON & ALBANY is inquiring for a 16-in. lathe and an 18-in. lathe.

THE NEW YORK CENTRAL is inquiring for a Turner angle cock grinder, and a LeBlond 14-in. lathe.

THE NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY is inquiring for a 11-ft. engine lathe, a Cincinnati grinder, and a Cincinnati electric drill.

THE RAILROADS have placed orders for machine tools as follows: A 30-in. by 14-ft. time saving lathe; a 48-in. car wheel borer; a combination journal turning and axle lathe; a No. 2 car wheel lathe, and a 14-in. vertical surface grinder, all with the Niles-Bement-Pond Company.

Signaling

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company material for an electric interlocking at Dumont, N. J.; 12 working levers. Color-light signals will be used.

THE LONG ISLAND has ordered from the Union Switch & Signal Company, 12 sets of locomotive apparatus for automatic train control, the Union coder system.

THE PITTSBURGH RAILWAYS COMPANY has ordered from the Union Switch & Signal Company materials for an automatic block signal system on its line between Tylerdale, Pa., and Mine No. 3, 20 miles, single track. The order calls for 58 color light signals, 60 impedance bonds, 95 transformers and other apparatus.

Miscellaneous

THE WESTERN PACIFIC is inquiring for one 700-ton car float.

THE LONG ISLAND has ordered from the General Railway Signal Company, material for an electric interlocking at Winfield Junction, N. Y.; 37 working levers.

* * *

Supply Trade

William M. du Pont, Jr., of Wilmington, Del., has been elected chairman of the executive committee of the **Miller Train Control Corporation,** succeeding his father, the late William M. du Pont.

The Northern Engineering Works, Detroit, Mich., has appointed the **Interstate Supply Company,** Commercial Trust building, Philadelphia, Pa., its district factory representative for that district.

W. J. Walsh, formerly vice-president of the Galena Signal Oil Company, has been appointed special representative of the **Standard Oil Company of Indiana,** with headquarters at Chicago.

The Sargent Company, Chicago has moved its office and factory, from 625 West Jackson boulevard, to 2073 Southport avenue. In addition to its standard line the company has taken on a new line of steam and pressure gages.

J. V. Moore, formerly with the Simonds Saw & Steel Company, is now representing **The Billings & Spencer Company,** Hartford, Conn., in the states of Pennsylvania, Delaware and New Jersey. Mr Moore's headquarters are at Huntingdon, Pa.

L. C. Bihler, traffic manager of the **Carnegie Steel Company,** Pittsburgh, Pa., has been appointed an assistant to president and general traffic manager; **W. S. Guy,** assistant traffic manager, has been appointed traffic manager; **G. W. Seaman** and **C. W. Trust** have been appointed assistant traffic managers.

The Fulton Iron Works, St. Louis, Mo., has bought the **Foos Engine Company,** Springfield, Ohio, makers of Diesel engines of from 60 to 300 hp., according to an announcement of Harry J. Steinbreder, president of the Fulton company. The Fulton company, which has been turning out the higher horsepower engines for some time, will now have a line of Diesel engines ranging from 60 to 2,000 hp.

The Ohio Steel Foundry Company, Lima, Ohio, has given a contract to the **H. K. Ferguson Company,** Cleveland, for a foundry unit to cost with equipment, $75,000. Additional equipment for the manufacture of locomotive castings and other heavy steel products will be provided in the new building, which will be 53-ft. wide, 253-ft. long and 35-ft. high. A 10-ton bridge crane and a jib crane of the same size will be installed.

The partnership interest of **W. O. Washburn** in the **American Hoist & Derrick Company** has been purchased and taken over by **Frank J. Johnson,** the senior partner and one of the founders. The business will be continued as the American Hoist & Derrick Company under the form of a corporation with **F. J. Johnson,** as president and treasurer, **Howard S. Johnson,** vice-president in charge of sales and **Frederic Crosby,** as vice-president in charge of production. No announcement has been made by Mr. Washburn as to what his future business connections may be.

Obituary

William K. Edgar, first vice-president of the Edgar Steel Seal & Manufacturing Co., died at Lawrence, Kan., on April 26.

Trade Publications

CONCRETE FLOORS.—The Master Builders Company, Cleveland, Ohio, has published a 30-page bulletin with the title "Plain Talk About Concrete Floors." This booklet, which deals with the advantages of concrete hardeners for concrete floors, includes information and other data relative to the service records of a number of concrete floor installations.

LOCOMOTIVE FEEDWATER HEATING.—Using simple calculations, based on analysis of test data, the Superheater Company, 17 East 42nd Street, New York, discusses in its booklet, "Locomotive Feedwater Heating," the extent to which a feedwater heater increases boiler evaporation and how closely these figures are checked by data from actual tests. Hitherto unpublished advantages of the feedwater heater are included in this discussion.

FILING SYSTEM.—The Globe-Wernicke Company, Cincinnati, Ohio, has published a 24-page booklet on a system for the filing and indexing of maps, plans, drawings and similarly large sheets. Installations and various types of filing units are shown in the booklet.

HAND-POWER CRANE.—The Whiting Corporation, Harvey, Ill., has issued a four-page bulletin describing and illustrating a new type of hand-power crane which it has recently developed.

NARROW GAGE GASOLINE LOCOMOTIVES.—Up-to-date information on narrow gage gasoline locomotives ranging from 10 to 30 tons, is given in Bulletin No. 2824 issued by the George D. Whitcomb Company, Rochelle, Ill.

PUTNAM SERVICE.—A comprehensive picture of the scope and magnitude of Putnam service as it is rendered in industrial and railroad fields through heavy duty machines and production tools, is given in the 32-page book, entitled "To Help You See Us as We See Ourselves," dedicated, on its ninety-second anniversary, to the founders of the Shaw-Crane-Putnam Machine Company, 100 East 42nd street, New York. The book is divided into two sections, the first section depicting the Putnam Works at Fitchburg, Mass., the types of machines manufactured, and several of the departments wherein the machines are assembled, tested, etc. The second section similarly illustrates the Shaw Crane Works at Muskegon, Mich.

Construction

ALABAMA & WESTERN FLORIDA.—The Interstate Commerce Commission has made public a proposed report by Examiner Molster recommending denial of this company's application for authority to build a line from Chipley to Graceville, Fla., saying that if and when there develops the need for additional railroad facilities in the territory affected such facilities should be provided by the Louisville & Nashville by the construction of a line from Graceville to Chipley or from Graceville to Cottondale.

BALTIMORE & OHIO.—This road has let a contract to the Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa., for water treating plants at Layton, Griffin and Wildwood, Pa., at a cost of $45,000. The call for bids on this work was reported in the May 19 issue of the *Railway Age.*

CITY OF HOUSTON (TEX.).—A contract has been awarded to Walker and Elder, Houston, for the construction of a street subway under the tracks of the Galveston, Houston & Henderson, the Houston Belt & Terminal and the International Great Northern which will connect Franklin avenue with Navigation boulevard at Houston at a cost of about $260,000. The subway will have two 20-ft. roadways and will be 185 ft. long, passing under nine tracks. Drainage of the structure will be effected by the construction of a 4-ft. box culvert, 2,000 ft. long, which will empty into Buffalo bayou. Seventy-five per cent of the cost will be borne by the three railroads involved.

ERIE.—This road has let a contract to Arthur McMullen Co., New York, for additional yard facilities at Port Jervis, N. Y., at an estimated cost of $100,000.

GRAND TRUNK WESTERN.—The Interstate Commerce Commission has authorized this company to build a 7-mile belt line in Pontiac, Mich., to cost approximately $647,000 exclusive of land.

KEYSTONE WOOD, CHEMICAL & LUMBER CORPORATION.—This company has filed a petition with the New York Public Service Commission for permission to construct a railroad between the towns of Greig and Webb, N. Y. The line is planned for the opening of a timber tract and will be used exclusively for hauling lumber.

LOUISVILLE & NASHVILLE.—This company plans the construction at Mobile, Ala., of a 12-track yard with a turntable, 17-stall engine house, coaling station, cinder pits and similar engine terminal facilities and a combination boiler, blacksmith and machine shop adjoining the roundhouse. The yard will be located within the northern limits of Mobile immediately south of Three Mile creek. Grading will be done by the Alabama State Docks Commission with dredged material pumped from harbor slips, track work will be

undertaken by company forces while building work will be contracted when plans are completed.

MIDLAND VALLEY.—A contract has been awarded to G. D. Morrow & Son, Tulsa, Okla., for the construction of a highway subway under the tracks of this railroad at East Sixth street, Tulsa. The cost of the structure is estimated at $130,000.

MISSOURI PACIFIC.—This company plans the immediate construction at Dodson, Mo., of sheep feeding yards and cattle pens at a cost of $500,000. The present sheep feeding yards at Leeds, Mo., will be abandoned because of the plans of the Chevrolet Motor Company to erect an automobile assembly plant on the site of the feeding yards. A car assembly yard to serve the automobile plant will be constructed at Leeds at a cost of about $250,000.

MISSOURI PACIFIC.—This company has awarded a number of contracts for the raising of track above flood water stage on its line between Little Rock, Ark., and Texarkana as follows: to the Winston Brothers Company, Minneapolis, Minn., for raising track near Little Rock, to J. H. Walker, Little Rock, for raising track near Haskells, Ark., and at two points near Traskwood, Ark.; and to Harvey Brown, Little Rock, for raising track near Donaldson, Ark. The bridge work on the raising of track near Benton, Ark., will be undertaken by the List and Weatherly Construction Company, Kansas City, Mo.

NORTHERN PACIFIC.—This road has awarded a contract to the Ogle Construction Company, Chicago, for the erection of a 500-ton electrically-operated steel coaling station at Glendive, Mont.

PENNSYLVANIA.—This road has let a contract to Brann & Stuart Co., Philadelphia, Pa., for the reconstruction of the Forty-First street bridge over tracks of the railroad at a cost of $130,000. Sinclair & Grigg, Philadelphia, have been awarded a contract for the construction of a steel and brick freight delivery warehouse 92 ft. by 460 ft. at Tioga and D streets, Philadelphia, at a cost of $260,000.

PERE MARQUETTE.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of lines from Green Oak to Wixom, 7.8 miles, and from Pontiac to Richmond, 30 miles, all in Michigan. The company has pending an application for authority to build an extension from Wixom to Pontiac and a belt line at Pontiac and says that the present application, with the construction proposed in the pending application, would enable it to shorten its distance between Chicago and Buffalo approximately 35 miles. It plans later to apply for a certificate for a line from Grand Junction to Woodbury.

SEABOARD AIR LINE.—This company contemplates the construction of a new freight depot with modern facilities at Savannah, Ga. Detailed plans for the structure have not yet been developed.

WABASH.—This company expects to take bids within the near future for the construction of a double track viaduct over North Broadway, St. Louis, Mo., at a cost of about $609,000. The city of St. Louis has agreed to pay the Wabash $40,000 in damages incident to the replacement of the present structure to make way for the widening of the street from 60 ft. to 80 ft. This company also expects to take bids soon for the construction of a fruit auction building at Carr and Second streets, St. Louis, at a cost of about $850,000. The building, which will be 780 ft. long and 56 ft. wide, will include a three-story office building which will have outside dimensions of 82 ft. by 140 ft. The structure will be served by two tracks which will permit the unloading of 75 cars at one time.

Railway Finance

BURLINGTON, MUSCATINE & NORTHWESTERN.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $100,000 of capital stock, shares of $100 par, to be used to acquire ownership of the line formerly owned by the Muscatine, Burlington & Southern. The new company will operate 5.5 miles of main line of the former road's 53.8 route miles (which included trackage rights) and also 5.6 miles of sidings and switching tracks in the vicinity of Muscatine.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to assume liability for and issue $24,000,000 of Chicago, Milwaukee & St. Paul 4½ per cent general mortgage bonds, series E, to be sold at not less than par and accrued interest, proceeds to be used to redeem outstanding bonds, to reimburse the treasury for the payment of matured bonds and for capital purposes.

CHICAGO & NORTH WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized the authentication and delivery of $1,375,000 of 4½ per cent general mortgage bonds to 1987, to be held in the treasury until further order of the commission.

CHICAGO, ROCK ISLAND & PACIFIC.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Edgerton Junction to Rushville, Mo., 24.9 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—This company and the St. Paul & Kansas City Short Line have applied to the Interstate Commerce Commission for authority for an issue of $600,000 of first mortgage 4½ per cent bonds of the Short Line company, to be guaranteed by the Rock Island and to be delivered to it in payment of indebtedness.

DETROIT, TOLEDO & IRONTON.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to control and operate the Detroit & Ironton, a new company organized by the Ford interests after they acquired the D. T. & I., which has acquired title to the various extensions built, and also the Ford Transportation Company, which owns the new equipment purchased. The Detroit & Ironton at one time applied to the commission for authority to take over the D. T. & I. but the plan was not approved by the commission. The application now states that the unification of the properties under the D. T. & I. will create a more efficient railroad unit and that it is proposed to acquire control under an operating contract, providing for the payment of a 6 per cent rental, and for completion by the D. T. & I. of the line from Durban to Malinta, Mich., and other facilities.

EDMONTON, DUNVEGAN & BRITISH COLUMBIA.—*Alberta Province Refuses Offer.*—J. E. Brownlee, premier of the Province of Alberta and president of this railroad, announced on May 25 that the Province would not consider the revised joint offer of the Canadian National and the Canadian Pacific for the purchase of the E. D. & B. C. The Province had previously refused the Canadian National offer for the purchase of the Alberta & Great Waterways and when it was found impossible to obtain better terms for its sale the government decided against disposing of one of the railroads without the other.

FLORIDA EAST COAST.—*Annual Report.*—The annual report for 1927 shows net income deficit after interest and other charges of $1,774,762. This compares with net income in 1926 of $2,783,949, or $7.42 per share. Selected items from the income statement follow:

FLORIDA EAST COAST

	1927	1926
Average mileage operated	851.46	849.21
RAILWAY OPERATING REVENUES	$17,859,635	$29,427,460
Maintenance of way	3,904,292	4,904,666
Maintenance of equipment	2,938,108	4,323,940
Transportation	6.385,368	10,593,578
TOTAL OPERATING EXPENSES	14,375,826	20,406,598
Operating ratio	80.5	69.3
NET REVENUE FROM OPERATIONS	3,483,809	9,020,861
Railway tax accruals	1,601,422	1,569,935
Railway operating income	1,865,708	7,436.748
Equipment rents, Net Dr.	1,210,084	2,183,332
Joint facility rents, Net Dr.	63,419	85.936
NET RAILWAY OPERATING INCOME	592,205	5,167,479
Non-operating income	947,266	738,040
GROSS INCOME	1,539,470	5,905,519
Interest on funded debt	3,182.350	3,002.925
TOTAL DEDUCTIONS FROM GROSS INCOME	3,314,232	3,121,570
NET INCOME (Def.)	1,774,762	2,783,949

GAINESVILLE MIDLAND.—*Abandonment.*—The Interstate Commerce Commission, upon further hearing, has withdrawn its certificate authorizing the abandonment of the line of railroad from Belmont, Ga., to Monroe, 32 miles.

GRAND TRUNK WESTERN.—*Construction of New Line.*—The Interstate Commerce Commission has authorized the Detroit, Grand Haven & Milwaukee, the Pontiac, Oxford & Northern and the Michigan Air Line to construct a belt line around part of the city of Pontiac, Mich. These all are Grand Trunk companies. The new line will be approximately 7 miles long and its cost is estimated at $647,408 exclusive of land. The commission in granting this application refused one of the Pere Marquette for permission to build a similar belt line together with an extension of 17.4 miles from Wixom to connect with its proposed belt line. In granting the Grand Trunk application the commission stipulates that it agree to switch in Pontiac under reasonable conditions for any other carrier which may later be permitted to enter the city.

KANSAS, OKLAHOMA & GULF.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the Kansas, Oklahoma & Gulf of Texas, of which it owns the stocks and bonds.

KANSAS & SIDELL.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to lease the properties of the Casey & Kansas and the latter has applied for authority to issue $100,000 of bonds for the purpose of purchasing the properties formerly owned by the Westfield Railroad, from Kansas to Casey, Ill., 19 miles.

LOS ANGELES HARBOR BELT LINE.—*Railroad Members of Operations Board Appointed.*—This company which has been formed by the Atchison, Topeka & Santa Fe, the Southern Pacific, the Los Angeles & Salt Lake and the Pacific Electric to take over the terminal facilities of those railroads and the City of Los Angeles (Cal.) serving the Port of Los Angeles will be in charge of a board of operations, with the following members: Walter B. Allen, president of the Board of Harbor Commissioners, representing the Los Angeles Harbor Belt Line; F. L. Annable, general superintendent of the Pacific Electric; G. E. Gaylord, superintendent of the Los Angeles division of the Southern Pacific; E. E. Cunningham, superintendent of the Los Angeles division of the Los Angeles & Salt Lake; and, J. R. Hitchcock, assistant general manager of the Coast Lines of the Santa Fe.

LOS ANGELES PASSENGER TERMINAL.—*Union Station Not Required.*—The Interstate Commerce Commission has issued a report which follows its original order in this case, permitting but not requiring the construction of a union station in Los Angeles.

MINNEAPOLIS & ST. LOUIS.—*Sale Recommended.*—The sale of this road to satisfy the demands of its creditors was recommended on May 22 in a report of H. S. Abbott, United States master in chancery, before whom more than $55,000,000 in claims has been presented since the road was placed in receivership on July 6, 1923. The report, made to United States Circuit Judge Wilbur F. Booth, under whom the road has been administered, states that the creditors are entitled to a decree foreclosing mortgages totaling $45,389,000. The report also shows that during a large part of the time of the receivership, interest has not been paid on the outstanding mortgages and that it is apparent that the continued operation by the receiver will not produce revenues sufficient to pay the unpaid interest and principal due and to become due. The report asks that the property described as subject to the lien of the respective mortgages now being foreclosed be sold in parcels or as an entirety, without valuation or appraisement and free from any right of redemption. Six of the seven mortgages against the road are included in the report. The first mortgage, on which $950,000 is due, was not brought up for foreclosure.

PENNSYLVANIA.—*Maturity.*—The Pennsylvania will, during the month of June pay off approximately $7,000,000 of maturing obligations. The important items will be $4,000,000 of Western Pennsylvania Railroad Company's 4 per cent consolidated mortgage bonds, which were issued in 1888, and a real estate mortgage, on which interest at 5½ per cent is being paid. The company has no other important maturities to meet during the present year until October, when it will pay off $1,050,000, of general equipment trust, series "C," certificates. Financial provision to pay off these obligations has been made through the new issue of capital stock.

SARATOGA AND ENCAMPMENT.—*Articles of Incorporation.*—Articles of incorporation for this railroad were filed at Cheyenne, Wyo., on May 9, following the purchase of the railroad by citizens of the territory served. The directors named are: C. R. Gray, president of the Union Pacific; W. M. Jeffers, vice-president and general manager of the Union Pacific; N. H. Loomis, J. L. Haugh and Herbert V. Lacey. The railroad was then given to the Union Pacific, the latter agreeing to operate it.

READING.—*Action of Coal Company Shares.*—A special Federal Court of Equity on May 28 at Philadelphia handed down a decree in the long-standing Reading dissolution suit, ordering the sale of some 6000 unconverted shares of the new Philadelphia and Reading Coal and Iron Corp. The sale is to take place June 18 in the office of the Reading Company, in the Reading Terminal, Philadelphia, and is subject to confirmation by the court. A hearing to determine whether the sale shall be approved will be held June 19, and at that time any of the certificate-of-interest holders who failed to exercise their rights to convert their certificates into actual shares may be heard on any objections they have to the sale. If the sale is confirmed the net proceeds will be distributed among the certificate holders in proportion to their holdings.

SPOKANE, COEUR D' ALENE & PALOUSE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon 2.9 miles of line in Spokane county, Ore.

TENNESSEE CENTRAL.—*Stock.*—Harvey Fisk & Sons, New York, have sold privately 10,000 shares of voting trust certificates for no par value common stock of this company. In connection with this transaction the banking firm has published an analysis of the road's position which says in part:

> The Tennessee Central Railway since reorganization in 1921 has been following out a policy of improvement and betterments to property and this rehabilitation, practically completed, will enable that railway to receive and profitably handle the large and growing traffic that its strategic position practically assures it.
>
> Nearly one-half of the ties on the railway have been replaced during the past two years and a vast number of tie plates have been placed in the track. Additional and larger engines and many new cars have been acquired and everything done thoroughly to modernize the railway. The thirty-five-mile belt line in Nashville is of vast importance to that large and growing city.

UNION PACIFIC. — *Acquisition.* — This company and the Saratoga & Encampment Valley have applied to the Interstate Commerce Commission for authority for the acquisition and operation by the Union Pacific of the line of the Saratoga & Encampment from Walcott to Encampment, Wyo., 44 miles. The road is in receivership and its abandonment was authorized by the Interstate Commerce Commission but a committee of citizens has proposed to acquire title to the property and turn it over to the Union Pacific for operation without cost. The Saratoga & Encampment Valley, a new company organized to take over the line, has also applied for authority to issue $100,000 of capital stock to be sold for the purpose of putting the road in condition for operation.

WESTERN PACIFIC. — *New Directors Elected.*—Ellery S. James of Brown Bros, & Co., New York, has been elected a director and member of the executive committee of the Western Pacific Railroad Corporation to succeed Alvin W. Krech, deceased. Arthur W. Loasby, president of the Equitable Trust Company, New York has been elected a director and a member of the executive committee of the Western Pacific Railroad.

Dividends Declared

Boston & Albany.—2½ per cent, quarterly, payable June 30 to holders of record May 31.

Pere Marquette.—Common, 1½ per cent, quarterly, payable July 2 to holders of record June 5.

Pere Marquette.—Prior preference, 1¼ per cent; 5 per cent preferred, 1¼ per cent, both payable August 1 to holders of record July 6.

Average Prices of Stocks and of Bonds

	May 29	Last week	Last year
Average price of 20 representative railway stocks.	95.13	95.71	94.46
Average price of 20 representative railway bonds.	124.26	123.21	115.20

Officers

Operating

J. F. Henry, passenger trainmaster of the Philadelphia Terminal division of the Pennsylvania, has been appointed superintendent of the Atlantic division and Camden Terminal division, with headquarters at Camden, N. J., succeeding L. K. Marr, promoted.

C. Percy, chief dispatcher of the Rio Grande division of the Texas & Pacific at Big Spring, Tex., has been promoted to trainmaster, with headquarters at the same point. **W. E. Cofer** has been appointed trainmaster on the Rio Grande division, with headquarters at Big Spring. **R. W. Wagner** has been appointed terminal trainmaster, with headquarters at Texarkana, Tex.

G. E. Bellrose, general superintendent of transportation of the express department of the Canadian National, with headquarters at Montreal, Que., has been promoted to assistant general manager of that department, with headquarters at the same point. **W. C. Webb,** general traffic agent of the express department at Montreal, has been promoted to traffic manager of that department, with headquarters in the same city.

W. A. McDonald, assistant superintendent of the Canadian National at Edmonton, has been appointed assistant superintendent of the Ontario district, Central region, succeeding Y. Moody, promoted. **D. C. Gilmore,** sleeping and dining car agent at Montreal, will succeed Mr. McDonald as assistant superintendent of the Western region, with headquarters at Edmonton. **L. W. Buller,** assistant superintendent of the Northern Ontario district at Toronto, has been appointed transportation assistant of the same district, with headquarters at North Bay. **A. H. Cavanagh,** assistant superintendent at Capreol, has been transferred to Toronto to replace Mr. Buller. **S. J. Faught,** assistant superintendent at Hornepayne has been transferred in the same capacity to Capreol and **G. Cooper,** assistant superintendent at Island Pond, Vt., has been transferred to Hornepayne in the same capacity, replacing Mr. Faught. The position of assistant superintendent at Island Pond has been abolished.

Eugene C. Bagwell, operating assistant to the vice-president of the Seaboard Air Line, with headquarters at Savannah, Ga., has been appointed general manager, with headquarters at the same point. Mr. Bagwell was born on October 3, 1884 at Raleigh, N. C., and was graduated from the North Carolina State College in 1904. He entered the service of the Seaboard Air Line in August, of the same year, as construction engineer, serving in this capacity until March, 1908, when he was appointed superintendent of the Charlotte Harbor & Northern (part of the Seaboard Air Line). From September, 1909, to April, 1910, he was resident engineer, and on the latter date he became principal assistant engineer. He served in this capacity until April, 1914, when he was made assistant to the president. Three years later he became division

Eugene C. Bagwell

superintendent, remaining in this position until February, 1925, at which time he was appointed general superintendent. He was promoted to the position of operating assistant to the vice-president in February, 1928, and served in that capacity until May of this year, when he became general manager.

Lewis K. Marr, superintendent of the Atlantic division of the Pennsylvania, with headquarters at Camden, N. J., has been apointed assistant to the general superintendent of the New Jersey division, with headquarters in New York. Mr. Marr was born in Philadelphia, Pa., on September 2, 1869. He entered railway service at the age of eighteen as a

Lewis K. Marr

telegraph operator on the Renovo division of the Pennsylvania. After serving in this position for four years, he resigned, returning again to the Philadelphia division as telegraph operator on March 13, 1893. The following year he became leverman, and two years later he was promoted to assistant to the dispatcher. He was appointed assistant to the train director in February, 1902, and two years later became train director of the Philadelphia Terminal division. He held this position until December, 1909, when he was appointed yardmaster. In January, 1910 he was transferred to New York in the capacity of general yardmaster in charge of passenger movements in and out of the New York improvement and tunnel extension, and in November of the following year he was appointed passenger trainmaster of the New York division. He served in this capacity until May, 1916, when he was promoted to terminal passenger trainmaster. He was advanced to assistant superintendent of the Philadelphia Terminal division on September 16, 1918 and to assistant superintendent of the New York division in March, 1920. He was appointed acting superintendent of the same division in October, 1925, serving in this position until his recent appointment as assistant to the general superintendent which becomes effective on June 1.

John C. Roth, who has been promoted to superintendent of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been con-

John C. Roth

nected with the operating departments of western railroads for more than 33 years. He was born at St. Paul, Minn., and first entered railway service on the Canadian Pacific in 1892. For the following 25 years Mr. Roth served in that capacity, as a yard clerk on the Northern Pacific at Tacoma, Wash., as a dispatcher's clerk, as assistant chief dispatcher, as car distributor, as assistant superintendent of transportation, as superintendent of the North Yakima & Valley (now part of the Northern Pacific) as general agent for the Northern Pacific at North Yakima, Wash., and as trainmaster on the Northern Pacific at Pasco, Wash. In June, 1917, he was promoted to assistant to the general superintendent at Tacoma, where he remained until March, 1918, when he was appointed district manager of the car service section of the United States Railroad Administration at Portland, Ore. He also served during federal control as car service assistant of the Northwestern region and terminal man-

ager of the Puget Sound Terminal district. On March 1, 1920, Mr. Roth became assistant director of the Bureau of Service of the Interstate Commerce Commission at Washington, D. C., and on June 1, 1922, he was promoted to director of the Bureau of Service. He returned to railroad service in April, 1923, as general superintendent of transportation of the Great Northern, with headquarters at St. Paul, entering the service of the Burlington in January, 1927, as general inspector of transportation, with headquarters at Chicago. Mr. Roth's promotion to superintendent of transportation became effective upon the retirement of **W. L. Barnes** as general superintendent of transportation on May 15.

Traffic

E. E. McCullough has been appointed general agent of the Western Pacific, the Sacramento Northern and the Tidewater Southern at Omaha, Neb.

Milton E. Bernet resigned on May 17 as general advertising agent of the Wabash, with headquarters at St. Louis, Mo., to become publicity manager of the Mountain States Telephone and Telegraph Company, with headquarters at Denver, Colo.

W. S. Evans has been appointed assistant general freight agent of the Atlantic Coast Line at Orlando, Fla., succeeding **C. A. Maull,** who has been transferred in the same capacity to Miami, Fla.

J. L. Totten has been appointed general agent in the freight department of the Union Pacific at San Francisco, Cal. **R. M. Ritchey,** traveling freight and passenger agent at San Francisco, has been promoted to general agent at San Jose, Cal.

J. A. Ormandy, general passenger agent of the Southern Pacific, with headquarters at Portland, Ore., has been promoted to assistant passenger traffic manager with headquarters at the same point, succeeding **John M. Scott** who retired from active service on June 1. **B. C. Taylor,** general agent at Seattle, Wash., has been promoted to general passenger agent at Portland replacing Mr. Ormandy.

Engineering, Maintenance of Way and Signaling

John H. Schubert, who has been promoted to signal engineer of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., was born at Baltimore, Md., on May 7, 1887, and after attending Maryland Institute, entered railroad service on the Pennsylvania in March, 1905, as a signal helper. From March, 1906, to March, 1910, he served with the Union Switch & Signal Co. as a signalman, then being promoted to construction foreman. On September 1, 1917, Mr. Schubert returned to railway service as general signal inspector of the Nashville, Chattanooga & St. Louis, with headquarters at Nash-

John H. Schubert

ville. His promotion to signal engineer became effective on May 1.

C. A. Hopkins who has been appointed valuation engineer of the Chicago & Illinois Midland, with headquarters at Springfield, Ill., was born on August 20, 1887, at Steubenville, Ohio. He entered railway service in 1907 on the Carolina, Clinchfield & Ohio (now the Clinchfield) as resident engineer in charge of construction near Johnson City, Tenn. For the following eight years he served in the engineering departments of the Chicago, Milwaukee & St. Paul and of the Moffat railroad, with the Costina Estates Development Company in Southern Colorado as field engineer, with the Palm Beach Farm Company

C. A. Hopkins

in Florida, as locating engineer for the Montezuma & Western (now abandoned), as resident engineer on the Milwaukee at Lewistown, Mont., as assistant city engineer of Lewistown, and as assistant engineer on the Milwaukee. After a brief period in 1917 in which he engaged in private work, Mr. Hopkins returned to the Milwaukee as an assistant engineer on valuation work. From April, 1918, to March, 1924, he was engaged in valuation and maintenance and in electrification studies on that railroad. For the following two years he was secretary and treasurer of the Pomeroy Paper Products Company, Chicago, then serving from July, 1926, until his appointment as valuation engineer of the Chicago & Illinois Midland, as staff engineer of the Roberts, Pettijohn Wood Corporation, Chicago, engaged in railroad inventory work.

Mechanical

R. H. Flynn, superintendent of motive power of the Northern division of the Pennsylvania, has been appointed superintendent of motive power of the Western Pennsylvania division, succeeding J. L. Cunningham, promoted.

William A. Carlson, general foreman of the New York, Chicago & St. Louis at Fort Wayne, Ind., has been appointed general master mechanic of the Erie, with headquarters at Hornell, N. Y. Mr. Carlson was born on April 27, 1890, at Chicago. He completed a special course at the Pennsylvania State College and in June, 1906, entered the service of the New York, Chicago & St. Louis as a machinist helper at Stony Island, Ill. He served his apprenticeship from 1908 until July, 1912, when he was transferred to Ft. Wayne, Ind., as a machinist. He returned to Stony Island in February, 1913, as a roundhouse machinist; became assistant

William A. Carlson

roundhouse foreman in November, 1916, and general foreman in February, 1918. On April 16, 1923, he was appointed general foreman at Fort Wayne, from which position he recently resigned to become general master mechanic of the Erie.

J. L. Cunningham, superintendent of motive power of the Western Pennsylvania Division of the Pennsylvania, has been appointed assistant to the general superintendent of motive power of the Central region. He was born on September 28, 1874, at West Fairfield, Pa., and entered the service of the Pennsylvania on November 13, 1891, as an apprentice in the Altoona machine shop. He was made machinist on February 1, 1896, and in August of the same year resigned from the service of the

Pennsylvania. In June, 1900, he returned to that road as machinist in the Altoona machine shop and the following month was transferred as inspector to the Philadelphia division. On March 1, 1901, he was transferred to the Pittsburgh division in the same capacity, and in December, 1902, was made foreman on the Bedford division. One year later he was appointed assistant master mechanic on the Philadelphia division. In January, 1904, he became general foreman, and in August, 1906, he was appointed assistant engineer of the Central division. He was promoted to master mechanic of the Maryland division on July 1, 1913, and three years later was transferred to the Philadelphia division in the same capacity. He held this position until June, 1917, when he became superintendent of motive power of the Western Pennsylvania division, serving in this capacity until his recent appointment as assistant to the general superintendent of the Central region.

M. R. Reed, master mechanic on the Pennsylvania at Fort Wayne, Ind., has been apointed superintendent of motive power of the Northern division, succeeding R. H. Flynn, transferred. Mr. Reed was born on June 26, 1883, at Newton, Ill. He was graduated from Rose Poly-

M. R. Reed

technic Institute in June, 1905. Previous to his graduation he had served during the summer of 1904 as a laborer in the Terre Haute shops of the Pittsburgh, Cincinnati, Chicago & St. Louis, a subsidiary of the Pennsylvania. After his graduation he returned to the Terre Haute shops as a signal repairman. A few months later he resigned to become a special apprentice on the Union Pacific at Omaha, Neb. He returned to the Panhandle in September of the following year as a draftsman in the Terre Haute shops. In June, 1907, he was promoted to assistant foreman and in February, 1909, he became chief draftsman. In April, 1917, he was transferred to the Northwest system of the Pennsylvania, Lines West, as a general car inspector, and he was promoted to superintendent of car repairs in September, 1918. He was appointed master mechanic of the Eastern division in August, 1919 and when the administration of the Pennsylvania was re-organized in March, 1920, he was transferred to the Logansport division as master mechanic. In April, 1925, he was appointed assistant general superintendent of motive power of the Northwestern region. Mr. Reed was appointed acting master mechanic of the Fort Wayne division, with headquarters at Fort Wayne, Ind., in July, 1926 and later in the same year was appointed master mechanic at Fort Wayne, serving in this capacity until his recent appointment as superintendent of motive power of the Northern division.

R. G. Henley, assistant to the superintendent of motive power of the Norfolk & Western, with headquarters at Roanoke, Va., has been appointed superintendent of motive power, succeeding A. Kearney, deceased, with headquarters at the same point. **J. J. Barry,** general master mechanic at Roanoke, has been appointed assistant to the superintendent of motive power, with the same headquarters, replacing Mr. Henley. **O. F. Hark,** master mechanic at Portsmouth, O. has been appointed general master mechanic at Roanoke. He will be succeeded by **J. L. Barry,** master mechanic at Bluefield, W. Va. **T. L. Brown,** general foreman at Lambert Point, Va., replaces Mr. Barry as master mechanic at Portsmouth.

Purchases and Stores

John Ball, who has been promoted to assistant general purchasing agent of the Chicago & North Western and the Chicago, St. Paul, Minneapolis &

John Ball

Omaha, with headquarters at Chicago, has spent his entire railway service with the North Western. He was born at Manchester, England, on November 23, 1873, and after receiving his early education in a private school in England he attended a business college at Clinton, Iowa. Mr. Ball entered railway service in April, 1902, as a stenographer on the North Western, being advanced to stenographer to the general purchasing agent three years later. In August, 1905, he was placed in charge of stationery and dining car supplies and in November, 1908, he was advanced to buyer of general supplies. Mr. Ball was promoted to assistant purchasing agent of the North Western on January 1, 1911, a position he held until his further promotion to assistant general purchasing agent of the North Western system.

Special

Clifford A. Betts, office engineer for the Moffat Tunnel Commission, Denver, Colo., who was in responsible charge of all engineering work in connection with the construction of the tunnel, following the resignation of **R. H. Keags** in 1925, has resigned to engage in engineering work on the construction of the Owyhee dam in Oregon.

Obituary

A. William Hodgdon, assistant to the general traffic manager of the Pennsylvania, with headquarters at Chicago, died at his home in that city on May 29 after a protracted illness.

F. A. Turner, assistant engineer of the Texas & Pacific, with headquarters at Dallas, Tex., died on May 21 as a result of injuries received in an accident on a new bridge over the Atchafalaya river near Melville, La.

L. B. Beardsley, assistant superintendent of the Sioux City and Dakota division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Sioux City, Iowa, died in that city on April 17 after 67 continuous years of service with the Milwaukee. Mr. Beardsley was born in Schuyler County, N. Y., in 1842 and entered the service of the Milwaukee in 1861 as a brakeman. He was advanced successively to freight conductor, passenger conductor and superintendent of sleeping cars and in 1882 he was promoted to superintendent of the Iowa division. Mr. Beardsley was further promoted to superintendent of the Sioux City and Dakota division in 1886, with headquarters at Sioux City. He occupied this position for the next 30 years, until failing health forced him to accept the apointment of assistant superintendent of the same division in 1916.

Edgar Freeman, assistant general treasurer of the New York Central Lines, died at his home in New York on May 25. Mr. Freeman was born on January 25, 1862, and entered the service of the New York Central & Hudson River as a clerk in the treasurer's office in January, 1880. In 1890 he was appointed cashier of this company and in 1910 became assistant treasurer of the Lake Shore & Michigan Southern, the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis and other western lines of the New York Central System. On March 1, 1920, he was appointed assistant general treasurer of the New York Central Lines and continued in that capacity until the time of his death.